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Manual for Seed Inspectors

Committee

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MANUAL

FOR SEED
INSPECTORS

ASSOCIATION OF
AMERICAN SEED CONTROL OFFICIALS

-A-

**MANUAL
FOR
SEED INSPECTORS**

ASSOCIATION OF AMERICAN
SEED CONTROL OFFICIALS

SEED INSPECTORS' QUALIFICATION
AND TRAINING COMMITTEE

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September 1959

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Qualifications of a Seed Inspector
by
Lee Scott
Oklahoma State Seed Inspector

(as given at the 1950 meeting of the Association
of Seed Control Officials of the Southern States)

A seed inspector must be a man of vision and ambition (not the vision of a great builder), but the vision of leading the seedsmen of his territory to handle the best of seed, and the ambition to carry out that vision. He must be an after-dinner speaker, night owl, able to work all day and drive all night and appear fresh the next day; learn to sleep on hard mattresses and eat two meals a day to economize on traveling expenses so he will be able to make his territory the required number of times each month.

He must be able to command the respect of the dealer, stop sale of his seed and laugh with him while doing it; file charges in the courts on wayward dealers one day and pull samples in his store the next trip without holding a grudge. In other words, be a good diplomat at all times. Inhale dust, drive through snow, rain and sleet, freeze in seed warehouses, and work all summer without perspiring or acquiring B.O.

He must be a man's man, a ladies' man, a model husband, a fatherly father, a good provider, a plutocrat, a democrat, republican, new dealer, old dealer, and a fast dealer in recognizing shady seed dealers, an analyst, politician, and know the best methods of operating a seed cleaner.

He must be able to interpret the office letters to the dealer on his next trip around, copy needed information from invoices without seeing the prices, write legible reports, attend all farm meetings, field days, funerals, visit dealers in hospitals and jails, contact and inspect all firms every six weeks, and in spare time, make out reports for the office.

He must be an expert driver, liar, traveler, card player, financier, capitalist, philanthropist, botanist, authority on psychology, seeds, weeds, dogs, cats, horses, squirrels -- and above all things he should be able to tell a bean seed from a squash seed.

FOREWORD

A seed inspector's manual is basic to a good seed inspection program. Inspectors are constantly confronted with new problems in the field and this manual may offer the solutions. A new inspector will find this manual useful in instructing him in the basic principles of a good seed inspection program and his place in that program.

Good public relations are also of importance in seed inspection work. It is essential that a seed inspector not only understands his work but be able to convince seed dealers and farmers of the importance of seed inspection. One error can nullify years of good work. An inspector's manual can be helpful in eliminating mistakes and maintaining good public relations.

The committee which has prepared this manual has produced an excellent guide for seed inspectors. Control officials and inspectors should obtain copies for use in their work. This manual should be instrumental in bringing about uniform practices in the administration of our various seed laws. This is important to control officials and seed dealers alike.

Orrion A. Ulvin, President
Association of American Seed
Control Officials.

PURPOSE OF SEED INSPECTION

Present and Future

The purpose of seed inspection in the enforcement of seed laws in the United States at present is to determine the quality of seed being offered for sale in order to decide (1) whether it is correctly represented, and (2) whether it is prohibited from sale and therefore is not suitable for planting purposes.

The procedure for making these determinations in seed laboratories by testing samples representing the seed in question is well standardized under the rules for seed testing adopted by the Association of Official Seed Analysts. Procedures for making the complete inspection in the field at the time of sampling of soon thereafter are in their infancy.

If seed inspection is to accomplish the greatest good in the future it must strive towards the goal of preventing the sowing of low quality seed by farmers. This means not only seed sold by local merchants but seed produced by the farmers from their own crop or from their neighbor's crop. So-called "drill-box" surveys have shown the need for a tremendous educational program which can, we believe, best be presented by seed inspection on the farm as well as in the stores.

Seed inspection of seed offered for sale in stores must be geared, as soon as methods and procedures can be developed, to preventing the sale of low quality seed falsely labeled before it can be sold and planted. The routine sampling of seeds with delayed testing in the laboratory and routine reporting of the results in bulletins months afterwards is little consolation to a farmer who planted seed which did not germinate or seed which infested his fields with harmful weeds. Seed inspection must look forward to closing the door "BEFORE the horse is stolen." Every reliable method and procedure developed towards that end will be a step in the right direction.

For this reason, the role of the seed inspector in the future seed inspection picture should be enlarged from what has been referred to in the past as the role of a "bag-puncher" to the broader role of a seed extension -- seed sampling -- seed analysis and seed law-enforcement specialist.

SEED INSPECTOR'S MANUAL

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I History of Seed Legislation

A. States

In 1821, Connecticut passed a law prohibiting the sale of grass seed containing Canada thistle and other weeds. Michigan, in 1871, prohibited the sale of seed containing Canada thistle and milkweed. In 1867, 1872, 1877 and 1895, Illinois, California, Missouri, and Nebraska legislated against seed containing Canada thistle.

The two earliest vegetable seed laws were passed by Florida in 1889 and by North Carolina in 1891. By 1926, only seven States had no seed law, and by 1929 only one State was without a State seed law. By 1941 all 48 States had a seed law.

A chronological history of the enactment of the first seed laws in the various States is as follows:

1821 - Connecticut	1913 - Minnesota
1867 - Illinois	- Montana
1871 - Michigan	- Oregon
1872 - California	- Pennsylvania
1877 - Missouri	1914 - Louisiana
1889 - Florida	1915 - Delaware
1891 - North Carolina	- West Virginia
1895 - Nebraska	1917 - Colorado
1897 - Maine	1919 - New Mexico
1901 - Washington	- Ohio
1904 - Kentucky	- Oklahoma
1907 - Iowa	- South Dakota
1908 - Vermont	- Texas
1909 - New Hampshire	1920 - Utah
- New York	1921 - Arizona
- North Dakota	- Arkansas
- Tennessee	- Indiana
- Wisconsin	1924 - Mississippi
- Wyoming	1925 - Kansas
1910 - South Carolina	- Massachusetts
- Virginia	1926 - Rhode Island
1911 - Idaho	1927 - Alabama
1912 - Maryland	1929 - Nevada
- New Jersey	1941 - Georgia

B. Federal

Previous to and about the turn of the century, there were imported into the United States certain seeds intended primarily for use as adulterants of seed of alfalfa and red clover. At the same time, large importations were made of low-grade forage crop seeds and screening material unfit for agricultural use. At the request of the United States Department of Agriculture, the United States Customs Service was instructed by the Treasury Department to send to the Department of Agriculture samples of all lots of imported forage plant seeds. These were analyzed and the results formed a basis for the Seed Importation Act of 1912.

This act restricted importations of seeds of the principal forage plants on the basis of weed seed content and low purity. This was amended in 1916 by adding a live seed requirement. These provisions of the act were largely self-enforcing, as comparatively little seed was imported which did not meet the requirements of the act, except in those cases where seeds were imported to be recleaned under customs supervision before being released for consumption.

In the years immediately succeeding World War I, there were heavy importations of red clover and alfalfa seed which were found by extended field tests to be unadapted to general agricultural use in the United States. In 1926, the Seed Importation Act was amended to require the coloring of all imported seed of alfalfa and red clover indicating as far as possible the degree of unadaptability by the color used.

From the time of the enactment of the coloring requirement up to and including the fiscal year 1938, the United States Department of Agriculture supervised the coloring of 16 million pounds of alfalfa seed and one-half million pounds of red clover seed. During the greater part of this time, domestic alfalfa and red clover seed sold at a premium of 10 cents per pound over that of imported seed. The identification of this imported seed by coloring saved the American farmer 5 to 6 million dollars in contrast to what he would have paid had this seed not been identified as imported seed and had been sold as domestic seed.

In 1926, the Seed Importation Act was further amended to prohibit the shipment in interstate commerce of any seed falsely and fraudulently misbranded. This provision, through authority for seizure of seed illegally passing in interstate commerce, was effective in helping States to cope with interstate shipments of misbranded seed. The criminal provision of the act, as applied to interstate shipments, however, proved ineffective in court principally because of the necessity for proving that the false labeling or false advertising was done "knowingly," and because of the lack of specific labeling requirements in the act.

In 1939, the new Federal Seed Act was passed. The new law made the labeling of seed in interstate commerce compulsory, strengthened the criminal provision by removing the necessity to prove that the act was violated "knowingly," and extended the scope of the act as it pertained to imported seed. The regulations under the Federal Seed Act have been amended periodically since 1940 to bring them into agreement with changes adopted from time to time in the "Rules for Testing Seed" of the Association of Official Seed Analysts and to meet other changes taking place in the seed industry and in seed law enforcement.

In 1956, the Federal Seed Act was amended to provide for civil action as well as criminal action against violators. Criminal action may be taken when a violation is proved to have been done by a person "knowingly, or as a result either of gross negligence or of a failure to make a reasonable effort to inform himself of the pertinent facts, * * *." Civil action may be taken in those cases in which these elements of intent cannot be proved.

C. History of the Uniform State Seed Law

In 1915 the Association of Official Seed Analysts adopted a set of "Principles Proposed for Uniform State Seed Law." The American Seed Trade Association insisted that principles were of no use to legislatures and that the actual wording of the law should be proposed. In 1917 the Association of Official Seed Analysts adopted a Uniform State Seed Law as agreed upon by the Association of Official Seed Analysts, the American Seed Trade Association, and the Wholesale Grass Seed Dealers' Association. This suggested law was amended in 1920, 1921, and 1927.

In 1939 the National Association of Commissioners, Secretaries, and Directors of Agriculture by resolution requested the agency administering the Federal Seed Act to prepare a Suggested Uniform State Seed Law to submit to the States, and at the same time suggested adoption of such a Uniform State Seed Law by the States. In September 1940 the United States Department of Agriculture made available for distribution a

Suggested Uniform State Seed Law patterned after that developed by the Association of Official Seed Analysts and the American Seed Trade Association but embodying features of the Federal Seed Act.

In 1949 the National Seed Control Officials adopted a resolution asking that a five-man committee be appointed to review and bring up to date the provisions of the "Suggested Uniform State Seed Law." In 1952 a new Suggested Uniform State Seed Law was adopted by the National Seed Control Officials; however, a resolution adopted at that meeting asked that the Legislative Committee of the National Seed Control Officials cooperate with the American Seed Trade Association, the Association of Official Seed Analysts, the International Crop Improvement Association, and the Weed Control Officials in considering the "Tentative Uniform Seed Law." In May and September 1954, meetings of a joint committee of these associations were held in Chicago, Illinois, and Lansing, Michigan, respectively. Differences which developed and could not be resolved were referred to a "Committee of Ten." In 1955 the American Association of Seed Control Officials adopted the Suggested Uniform State Seed Law as presented by its Legislative Committee but recommended that the cooperating committees and agencies make further studies toward improving the recommended Uniform State Seed Law. In 1957 the joint committee agreed on the final wording of the Suggested Uniform State Seed Law.

II Qualifications of Seed Inspectors

A. Education and Experience

1. Completion of high school
2. College graduate with a major in agricultural or plant sciences, or

Four years' experience in one or a combination of the following:

- | | |
|----------------------|--------------------|
| a. Farming | e. Seed processing |
| b. Country elevators | f. Seed marketing |
| c. Seed stores | g. Seed inspection |
| d. Seed production | h. Seed analysis |

Experience requirements above must be of such nature as to indicate familiarity with seed production, seed processing, or seed marketing. Education and experience may be substituted for each other on a year-for-year basis.

B. Personal

1. Medical examination - good health, freedom from disabling defects (including hernia), vision normal or corrected to normal, with freedom from color blindness.
2. Non-financial interest in seed industry.
3. Pleasant personality, good judgment, initiative, integrity, firmness, willingness to work, and tact in dealing with people.

C. Post-Employment Training

1. Spend sufficient time in an official seed laboratory to learn the following:
 - a. To identify through visual examination --
 - (1) Common agricultural and vegetable seeds
 - (2) Common weed seeds and all noxious-weed seeds
 - (3) Readily-distinguishable varieties of agricultural and vegetable seeds.

- b. Laboratory procedures
 - c. Seed sampling procedures
 - d. Requirements of the State seed law, Federal Seed Act, rules and regulations thereunder, and other related laws
 - e. To complete all seed inspector's reports and forms accurately and legibly
 - f. To prepare information to be used in enforcement procedures
 - g. General legal procedures
2. Spend sufficient time outside the laboratory to:
- a. Obtain general knowledge of seed production, processing, and marketing
 - b. Demonstrate under normal conditions ability to perform satisfactorily the duties of a seed inspector.

It is suggested that a written and oral examination be given previous to employment or after the post-employment training period.

III Authority of Seed Inspectors

Each State seed law should contain wording authorizing seed inspectors to inspect seed and examine records pertaining thereto. The Suggested Uniform State Seed Law contains suggested wording to be included in the State seed laws to provide authority for inspectors as follows:

Section 6(a)(1). The duty of enforcing this Act and carrying out its provisions and requirements is vested in the (State seed law enforcement officer). It is the duty of such officer who may act through his authorized agents:

To sample, inspect, make analysis of, and test agricultural and vegetable seeds transported, sold, or offered or exposed for sale within the State for sowing purposes, at such time and place and to such extent as he may deem necessary to determine whether said agricultural or vegetable seeds are in compliance with provisions of this Act, and to notify promptly the person who transported, sold, offered, or exposed the seed for sale, of any violations.

Section 6(b)(1) & (2). Further for the purpose of carrying out the provisions of this Act the (State seed law enforcement officer) individually or through his agents, is authorized:

To enter upon any public or private premises during regular business hours in order to have access to seeds and the records connected therewith subject to the act and the rules and regulations promulgated thereunder, and any truck or other conveyer by land, water, or air at any time when the conveyer is accessible, for the same purpose.

To issue and enforce a written or printed "stop sale" order to the owner or custodian of any lot of agricultural or vegetable seed which the (State seed law enforcement officer) or his agent finds is in violation of any of the provisions of this Act or rules and regulations promulgated thereunder, which order shall prohibit further sale, processing and movement of such seed, except on approval of the enforcement officer, until such officer has evidence that the law has been complied with, and he has issued a release from the "stop sale" order of such seed, * * *

Authority for seed inspection is contained in section 201.37 of the rules and regulations under the Federal Seed Act as follows:

201.37 Authorization - When authorized by the Administrator of the Agricultural Marketing Service, or by such other person as may be designated for the purpose, Federal employees and qualified State officials, for the purposes of the act, may draw samples of, secure information, and inspect records pertaining to, and otherwise inspect seeds and screenings subject to the act.

Care should be exercised by seed inspectors to determine whether the seed being inspected is actually subject to the seed law as worded. Most State seed laws are worded to indicate that seed "offered for sale" is subject to the State seed law. If seed is not being "offered for sale" but is stored in a warehouse or being transported within or through the State, it is not subject to the State seed law under this wording. If such seed has moved or is moving in interstate commerce, however, an authorized State inspector may sample the seed in the enforcement of the Federal Seed Act.

State inspectors who are authorized to inspect records pertaining to seed subject to the Federal Seed Act are not thereby authorized under the act to inspect seedsmen's records for the purpose of enforcement of their State seed law. Inspections of records of interstate shippers by State inspectors are made only when specifically requested by Federal officials. Such requests occur infrequently and only under unusual circumstances.

IV Public Relations

Authority exists for the seed inspector to sample seed and to enforce the seed law despite lack of cooperation and good will of the public being protected by the seed law or subject to the seed law. Effective enforcement, however, will not be accomplished unless the public affected is convinced of the necessity for a seed law and its strict enforcement. This has been amply demonstrated by lack of sound public relations in enforcement of other statutes.

To obtain such cooperation, considerable educational work is involved on the part of all seed enforcement officials, particularly seed inspectors. The seed inspector must first of all have at least the qualifications of a seed inspector as set forth in section II. "A little knowledge may be a dangerous thing"; therefore, the seed inspector should never be satisfied with the minimum amount of knowledge needed to "get by." He should continually add to his knowledge of seed and the seed industry in order to do his job most efficiently. Any attempt to impress the public with his authority, particularly without sufficient knowledge to support his actions, will be more detrimental than helpful.

Weighing the relative importance of violations is important. Strong statements and strong action on relatively minor or "technical" violations regarding labeling where the harm to the purchaser is practically "nil" detract from enforcement of the law on serious violations. This is not to say that the minor or "technical" violations should be overlooked. They should, however, be called to the attention of the violator in a helpful or educational manner and not as though the violations were a criminal offense. If technical violations continue to occur due to negligence on the part of the person previously informed of the labeling requirements, "stop-sales" should then be issued on the seed involved.

In all dealings with the public, we must remember that we are, after all, public servants. The law is for the protection of the public. If we discharge our responsibilities fairly and firmly we should do the greatest good for the greatest number.

It is inconceivable that all seed will ever be 100 percent correctly labeled. Our goal, therefore, is to reduce the percentage of falsely labeled seed to the lowest possible percentage for the protection of the planter or purchaser. Education and cooperation are the backbone of enforcement. Neither can succeed if public relations is forgotten.

What is public relations?

One modern writer, Dave Hyatt, has described it as "doing good and getting credit for it" while Voltaire is supposed to have said, "The only way to compel men to speak good of us is to do good."

Eleanor S. Ruhl has defined public relations as equalling P plus R wherein P equals performance and R equals reporting (or publicity). All the reporting or publicity released on work accomplished has little bearing, however, upon people forming opinions about our performance. Fly-by-night organizations can rely on publicity for a short time to convince gullible persons but reliable organizations back up their publicity by performance. One error on the part of a government employee is multiplied many-fold in the minds of persons who may have been inconvenienced by the error.

It is assumed that all seed inspectors were "selected" because they possessed certain abilities to do their jobs efficiently and to carry out the policies and programs of the jurisdiction under which they are employed. They should not be dismissed when elected policy officials are changed. Nevertheless, the attitude of persons subject to a law are frequently colored by what political party they belong to and which party is in power at the time. Discussions relating to politics or party preferences while on official duty is treading on dangerous ground. Generally speaking, most people, if well informed and courteously treated, will respect the purpose of enforcing a seed law and the public servants who administer it. If we find people who do not, it behooves us to analyze ourselves to "see ourselves as others see us" to determine if we are at fault.

Effective public relations rests solidly on four pillars:

1. Public relations is positive, not negative - Tell the public what you are going to do, what you have done, how it worked, the mistakes you made, and how the mistakes were corrected.
2. Public relations is everybody's business. Every public servant is a "public relations ambassador" - not just the public relations man.
3. Public relations is a continuous activity. You can turn publicity on and off but the public will not stop drawing its conclusions based on your performance.
4. Public relations is the effect everything you do has upon your public.

Every seed inspector should have a check-list to read and rate himself occasionally to determine whether his public relations may be good or bad. The list may include the following:

1. Do you answer the telephone cordially?
2. Do you write friendly letters?
3. Is your personal appearance and your mode of transportation such as not to detract from your position?
4. Do you greet people properly when entering their establishment?

5. Do you make your presence known to the owner or manager of the business?
6. Do you request assistance of dealers in your inspection work when it is most convenient?
7. Do you waste time visiting at length with employees?
8. Do you have an identification card to prove your authority to sample seed, inspect records, etc.?
9. Do you thank people who freely cooperate and assist you in your work?
10. Do you answer questions on the seed law raised by seedsmen or find the answer for them as soon as possible?
11. Do you comply as soon as possible with all requests for special assistance on urgent problems received from seedsmen directly or through your headquarters office?
12. Do you keep informed on new developments in the seed trade and know the reasons for new regulations?
13. Do you seek advice from better informed persons?
14. Do you follow up on actions requested of seedsmen to see that they are completed?
15. Do you comply to the letter with instructions received from your supervisor and suggest means of improvement in your work?
16. Do you conduct yourself properly in your off-duty hours so as not to reflect upon your position?
17. Do you analyze complaints on your work immediately and revise procedures to eliminate future complaints?
18. Would you like to be treated in the same manner as you have treated any particular seedsman if your positions were reversed?

This list may be added to by yourself as everyone's job has its own peculiarities.

V Establishing Violations

The first consideration in establishing violations is to ascertain that the seed is subject to the jurisdiction of your State seed law and/or the Federal Seed Act. The exemptions provided under your State seed law will have a bearing on whether or not the seed is subject to the requirements of such law. Regardless of the provisions of the State seed law, seed is subject to inspection and sampling under the Federal Seed Act if there is evidence that it moved in interstate commerce. Violations may be established on the basis of the following:

A. Labeling Requirements

Once it has been established that the seed is subject to the provisions of either the State seed law or the Federal Seed Act the inspector should examine all labeling and check it against the requirements of the State law and the Federal Seed Act. Irregularities may be broken down into two parts -- mislabeling and incomplete labeling.

1. Mislabeling - Most mislabeling must be determined by laboratory tests; however, the inspector may encounter the following:
 - a. A germination test date which has expired
 - b. Hard seed percentage included as part of the germination percentage
 - c. Name of kind or variety of seed obviously incorrect
 - d. Excessive noxious-weed seeds present but not shown on label

- e. The use of a brand name as a variety name or as part of a variety name without being identified as a brand
 - f. Names and rates of occurrence of noxious-weed seeds incorrect
 - g. Improper arrangement of information on labels, particularly for mixtures
 - h. Improper statement on treated seed or antidote, when required.
2. Incomplete labeling - In most cases such irregularities are obvious to the inspector. They constitute failure to label by omitting one or more of the following:
- a. Labeler's name and address or code designation with name and address of consignee
 - b. Lot number for agricultural seed
 - c. The name of the kind of seed
 - d. State of origin for kinds, when required, and the percentage of seed from each origin in order of its predominance
 - e. The percentages of pure seed, inert matter, weed seed, or other crop seed
 - f. The percentage of germination or hard seed or both
 - g. The date of the germination test
 - h. The variety name for vegetable seed
 - i. The words "Below Standard" on vegetable seed when the germination given is below standard

B. Noxious-Weed Seed

Such violations would usually be determined by the laboratory; however, under certain conditions the inspector might encounter circumstances which would be indicative of a noxious weed seed violation. Such circumstances would be as follows:

- 1. Prohibited noxious-weed seed shown on label
- 2. Restricted noxious-weed seed shown on label in excess of amount allowed
- 3. Names of noxious-weed seeds not given as such when rate is given
- 4. Rate of occurrence given improperly (per ounce or per pound)
- 5. Noxious-weed seeds obviously in seed when label shows "None."

C. Prohibited Seed

In a number of States there are certain conditions based on quality which prohibit the sale of certain seed. Since actual quality must be determined by tests, the establishment of such violations usually are not within the power of the inspector; however, the following circumstances would enable the inspector to establish such violations:

- 1. Seed labeled below minimum germination percentage allowed
- 2. Seed labeled to contain weed seed in excess of percentage allowed by law
- 3. Seed labeled to contain noxious-weed seed in excess of number allowed by law
- 4. Screenings offered for sale for seeding purposes
- 5. Seed pertaining to which there has been a false or misleading advertisement
- 6. Seed not labeled in accordance with provisions of the law, or having a false or misleading labeling

7. Seed which has been treated but not so labeled
8. Seed of kinds which may be prohibited from sale as such

D. Movement of Seed

The Federal Seed Act is not operative until seed has come to rest and State laws are usually not operative until the seed has been offered for sale at the State level. However, every effort should be made by inspectors to inspect and sample seed at the wholesale level before it has been dispersed to a large number of retailers. Samples collected at the wholesale level early in the season can be tested and serve as a basis for relabeling before the seed reaches the retailer and consumer level. All samples should be forwarded to the laboratory promptly by the most expedient means in order that action may be taken on violations as determined by the laboratory test, prior to the farmer's purchase of the seed, if possible.

E. Records and Reports

The following records and reports should be maintained and available on each established violation:

1. Complete inspector's report giving at least the following information:
 - a. Information on tag or tags
 - b. Number of bags in lot when received
 - c. Number of bags on hand when sampled
 - d. Number of bags sampled
 - e. Date of shipment or delivery
 - f. Name of carrier
 - g. Invoice number or transportation record number
 - h. All other incidental information readily available pertaining to the seed
2. Analysis Tag - Replacement tag must be used
3. Copy of official violation notice showing laboratory findings
4. Sample of the seed of minimum size specified in rules for sampling
5. Any of the following original documents, or authentic copies, are helpful, particularly on violations which may warrant prosecution:
 - a. Invoice
 - b. Bill of lading
 - c. Freight bill
 - d. Delivery receipt
 - e. Truck receipt
 - f. Shipping tag
 - g. Confirmation of sale
6. Any of the following records may give the shipper's claims as to quality, origin, or variety, or may establish sale:
 - a. Quotation
 - b. Catalog
 - c. Advertisement
 - d. Correspondence
 - e. Canceled check

- f. Canceled draft
- g. Copy of letter or telegram ordering the seed

VI Inspection Procedures

A. Equipment

A seed inspector should be provided with certain equipment in order that he can do a satisfactory job. Some equipment the inspector may wish to furnish himself. There are several sources for the following list of items:

- Triers or probes
- Sampling bags, pail, or cloth
- Envelopes or bags of various sizes
- Seals
- Replacement labels
- Stapling pliers
- Flashlight
- Magnifying glass
- Inspection report forms
- Dealer list or itinerary
- Pen and pencil

1. Triers or probes

There are several different kinds of triers used by inspectors and the seed trade. A common one is a sleeve-type trier which consists of a hollow brass tube inside a closely fitting outer tube or sleeve. The tube and sleeve have open slots in their walls so that when the tube is turned until the slots in the tube and sleeve are in line, the seed will flow into the inner tube; then by giving the tube half a turn the openings are closed. The tubes vary in size from a 30-inch trier which is a half-inch in diameter with 9 openings for sampling small seed in bags to a 10-foot trier, 1-3/8 inch in diameter with 20 openings and partitions between the openings for sampling seed in bulk in bins or barges.

Another type of trier is a 36-inch pointed brass tube with a slot running its length developed by the Indiana Seed Laboratory. The trier is forced into the bag with the slot down and then turned over to fill with seed, after which it is removed from the bag. This is used for clovers and alfalfa and other small free-flowing seed.

A third type of trier called the "thief" is a tube tapered from a pointed end with a slot beginning a quarter of the length from the tip and extending for half the length of the tube. This trier is forced into the bag until the seed can run down through the slot and out the open end of the trier. This trier has the disadvantage of only taking the sample from the outer edge of the bag which does not comply with the rules for sampling in the Federal Seed Act and most seed laws. Under the circumstances, it would be wise to dispose of all such triers.

2. Sampling pans

Sampling pans can be obtained in various sizes. Triangular pans or those with spouts make the transfer of the seed to envelopes or bags easier. Sampling cloths are convenient when emptying a long probe since the seed is poured out through the slot in the side.

This gives an opportunity to examine the seed at different levels in

a bag or bin to check for uniformity. A light canvas which has some body to it is the easiest to handle when transferring the seed to another container.

3. Envelopes or bags

Envelopes or bags come in many sizes to accommodate different sizes of samples and are made of paper or cloth. They may be obtained printed with any information which is desired by the seed inspector and his supervisor.

4. Seals

Seals are of many types. Usually the seed law enforcement agency has an official metal seal for resealing certified seed bags and some have an official gummed paper seal for sealing official seed envelopes. Gummed cellophane tape in rolls printed with the name of the enforcement agency serves as a usable seal. A plain gummed paper seal obtainable at any stationery store may be used, however. Pressure sensitive tape is also available for sealing holes in paper containers after sampling.

5. Replacement labels

A replacement label, as the name implies, replaces the original label on a bag of seed when the seed inspector wishes to remove the analysis tag from a bag to accompany his sample. The information from the analysis label is copied on the replacement label. Such a replacement label, bearing the name of the seed law enforcement agency along with a space for the inspector's name, is often a means to publicize the work of the seed inspector to seed dealers and farmers. Separate replacement labels for mixtures are helpful.

6. Stapling pliers

Stapling pliers are a help to the inspector for closing holes in bags, as well as for stapling labels, reports, and documents together.

7. Flashlight

A flashlight is almost a necessity since many warehouses where seed is stored are poorly lighted.

8. Magnifying glass

A magnifying glass is useful for identification of small seeds. A combination magnifying glass and flashlight is also available.

9. Inspection report forms

Inspection report forms will vary from State to State. The inspector's report accompanying a sample should contain much the same information as the form on page 12, suggested by the Federal Seed Act officials. An abbreviated report form may be used and the additional information obtained later on those samples found to be in violation.

10. Dealer lists

Dealer lists or an itinerary will also be provided for the inspector or he will be instructed on how and where to proceed with sampling. The procedures vary with different States.

UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Marketing Service

SEED INSPECTOR'S REPORT

Date collected _____ Inspector's Sample No. _____

Sampled in possession of _____, _____
(Name) (Address)

Shipped in interstate commerce by _____

From _____ To _____

Date of shipment _____ Name of carrier _____

Consigned to _____

Shipment received _____ Invoice _____
(Number) (Date)

Number of bags in original shipment _____ Freight bill _____
(Number) (Date)

Samples taken from _____ {opened bags } Truck receipt _____
unopened bags. (Number) (Date)

Number of bags on hand _____ Size of bags _____

Information stenciled on bags _____, _____, _____
(Lot number) (Brand) (Other)

Seedsman's tags, like the one attached herewith, were on _____ bags.

Sample was put in _____ bag, which was then sealed with _____, marked _____

and {given } to _____
sent (Name and address of official laboratory)

Duplicate sample in _____ bag, sealed with _____, was given to _____

INFORMATION ON TAGS

Kind, variety, or type _____ Lot No. _____

Where grown _____

Pure seed..... %	Germination..... %	Date of test _____
Weed seed..... %	Hard seed..... %	Noxious weeds: _____
Inert matter..... %	* _____	_____
Crop seed..... %	_____ %	_____

Name on tag _____ Address _____

Code designation, if any _____

REMARKS: _____

WITNESS TO SAMPLING:

(Name) (Signed)

(Title) Inspector.

Sample described herein arrived at the _____ Seed Laboratory on _____

_____, 194_____, with seal intact and was given Laboratory No. _____

* Wording on tag, if total is given. (Signed)

Seed Analyst.

11. Pen and pencils

No inspector should be without a pen and a supply of sharpened pencils.

B. Sampling Procedures

1. Seed sampling is important because it forms a firm basis for buying and selling seed, seed cleaning, seed analysis, or seed law enforcement. If the sample does not accurately represent the lot of seed in question, then the subsequent analysis of such sample cannot give accurate information concerning the lot of seed. For this reason, the sampling of seed by the seed inspector is an important part of his work and should receive his careful thought and attention.

A sample to be accurate must represent the entire lot of seed from which it is drawn. The seed inspector should study the rules for sampling seed as given in the following publications:

- a. The State seed law and the rules and regulations thereunder
- b. Rules and Regulations under the Federal Seed Act, United States Department of Agriculture Service and Regulatory Announcements No. 156.
- c. Rules for Testing Seed adopted by the Association of Official Seed Analysts.

A lot of seed should be uniformly mixed or blended throughout so that a sample drawn in one place will be as nearly as possible the same as a sample drawn any other place. Since no lot of seed is perfectly mixed, there will be some variation within a lot of seed and it is the task of the seed inspector to take small samples in such number, manner, and places as prescribed in the rules for sampling to overcome as far as practical any unobservable lack of uniformity in the lot being sampled.

Before actually taking the sample, the seed inspector should make certain preparations beginning with the assembling of the necessary equipment in such a way that it can be easily transported to the place where the seed is to be sampled.

When the inspector arrives where the seed is stored, he first should inspect the seed labels to determine what kinds of seed are present and the number and identity of the bags in each lot. Then, and only then, is the seed inspector ready to sample a lot.

- a. Drawing the sample: In order to secure a representative sample of seed, equal portions should be taken from evenly distributed parts of the quantity of seed being sampled. The inspector should be able to reach all parts of that quantity.
- b. Seed in bags: For free-flowing seed in bags, a trier should be used which is long enough to sample all portions of the bag. With long triers, the bags must be lying on their sides so that the trier can be thrust in at one end and travel the entire length of the sack. If the trier is thrust vertically into the sack, it has been shown that the seed does not fall into the trier along the whole tube at the same rate, but more falls in from the tops so that the results are not as satisfactory as when the bag is placed on its side and the trier thrust in horizontally. Usually the trier is thrust in at one corner and is pointed diagonally across the bag at the far corner, thus reaching all parts of the bag from the outside edge to the center and from the top to the bottom.

The sample should be taken from unopened bags since there is always a possibility that an open bag could have been contaminated and would not be the same as the rest of the lot. An exception may be made when there is no other seed present with which it could have become contaminated, such as mail-order shipments to farmers.

When there are less than five bags of seed, sample every bag. When there are more than five bags, sample every fifth bag, but never less than five bags; for example,

- from 5 to 25 bags - sample at least 5 bags
- from 26 to 30 bags - sample at least 6 bags
- from 31 to 35 bags - sample at least 7 bags

When taking a sample from more than one bag, the seed from each bag should be examined when it is removed from the bag to compare it visually with the seed taken from the other bags. This may be done by sampling into a pan or by pouring the contents of the probe into a pan or onto a cloth before dumping all of the seed together or part of the seed into the sample envelope. If there is a noticeable difference among the bags, then the seed should not be combined into a single sample. The seed from the bags which appear to be the same quality may be combined. Separate samples may be made of the seed from each bag and the combining can be done in the seed laboratory by the seed analyst who has the proper equipment and training for examining the seed for variations.

The inspector should use care in sampling to prevent leaving open holes in bags for the seed to run out. In coarsely woven bags it is possible to run the point of the trier between the threads; then when the trier is removed, the hole can be closed by running the point of the trier across the hole a couple of times in opposite directions to pull the threads together. When paper or closely woven rayon or cotton bags are sampled it is better to run the trier between the stitching around the edge of the bag. When thrusting the trier between the stitching across the top of the bag, it is a good idea to do this at the end which does not ravel. This can easily be determined since when the bag is upright the sewing will not ravel from the left end if the single stitches are facing the inspector. If the hole made by the trier does not close up satisfactorily it is a good idea to have a pair of stapling pliers along to close the hole with a staple. Be sure that the staple clinches properly so there are no sharp ends to cut the hands of persons who later may pick up the bag.

For non free-flowing seed, such as the chaffy grasses or uncleaned seed which will not flow through the trier, the sampling should be done by thrusting the hand into the bulk and withdrawing portions.

- c. Seed in bulk: Seed contained in bins, box cars, barrels, or other similar containers may be sampled by thrusting a long trier or the hand into at least seven uniformly distributed places in the bulk. The inspector must use the same care to get equal portions with each probing and to examine the seed for noticeable variation as described above before combining it with other portions.
- d. Seed in packets: In sampling seed in small containers, such as vegetable seed packets or boxes of lawn seed, entire unopened

containers should be obtained in sufficient number to supply a minimum-size sample.

e. Size of sample: The amount of seed required for an acceptable sample is as follows:

- a. Two ounces of the fine grasses, white clover or seeds of similar size
- b. Five ounces of red clover, lespedeza, bromegrass, flax, and seeds of similar size.
- c. One pound of Sudangrass, sorghum, or proso
- d. Two pounds of cereal, vetch, or larger seeds
- e. Two quarts of screenings
- f. 800 seeds of vegetables which require a germination only.
An additional quantity as specified by your supervisor if varietal growing tests are contemplated.

f. Securing a label: One of the analysis labels attached to the lot of seed should be secured to accompany the inspector's sample. The seed inspector should copy the information from the label removed onto one of his replacement tags to attach to the seed. Thus the inspector has the exact label to enclose with the seed as evidence of the labeling information. This label should be identified with the inspector's sample number, his initials, and the date.

The label can be enclosed with the seed even though the sample is forwarded as third or fourth class mail since the label is for identification of the seed and does not represent a message.

g. Handling the sample: After the sample has been drawn and placed in an envelope or bag provided for that purpose and the label is enclosed, the container should be sealed with a paper or metal seal. The sample must be identified with the inspector's sample number, his signature or initials, and the date. This sealing and identification of the sample and the label should be done in the presence of the person who witnessed the sampling, if possible.

The sample must then be sent or delivered to the official seed laboratory in such manner that it will not be damaged in transit.

C. Inspector's Report

1. With each sample of seed there will be an inspector's report giving additional information. This report should also have the inspector's number and date. This will serve to tie together the sample, the label, and the report. Such reports should include at least the name and address of the person in whose possession the seed was sampled, the name and address on the labels attached to the seed, the number of bags received, the number of bags on hand, and the number of bags sampled.

For seed shipped in interstate commerce where the Federal Seed Act is involved, information establishing the movement of the seed from the interstate shipper to the ultimate consignee must also be obtained. A copy of such a suggested report to be completed by the inspector will be found on page 16. (Additional information for interstate shipments). This form is particularly useful when the seed has not been sampled in possession of the consignee receiving the interstate shipment but has been sampled in possession of a subsequent purchaser.

ADDITIONAL INFORMATION
ON
INTERSTATE SHIPMENT OF SEED

To be secured from _____

Covering Inspector's Sample No. _____

Kind of seed _____ Lot _____

State Laboratory No. _____

Name and address of interstate shipper _____

Shipping point _____

Date of shipment _____

Amount of shipment _____

Invoice No. _____

Name and address of consignee _____

Name of carrier _____

Freight Bill No. and date, if seed moved by public carrier _____

REMARKS:

Name and Position of Person Furnishing Records

Signature of Inspector

D. Farmer's Seed

1. A seed inspector may find that seed sold by a farmer is subject to the State seed law and should be inspected and sampled. There are various ways of locating farmer's seed, such as newspaper advertisements, auction sale notices, inquiries, complaints, reports, conversations, seed tests, and notices at feed mills.

In sampling farm seed, the inspector must be careful to get a representative sample from the lot or to recognize when the seed is so poorly mixed that one representative sample is impossible from the lot. If the seed is sampled after it has been sold and moved from the place of production, then a visit to the producer may be in order to explain the requirements of the State seed law and to obtain additional information or additional samples.

E. Mail Order Seed

1. Seed purchased by farmers through catalogues is usually difficult for the seed inspector to locate unless he visits freight depots or farms or receives a complaint. Seed purchased by mail from an out-of-State company may not come under the State seed law since the sale is actually completed in the office of the seed company in the other State. Mail-order seed in interstate commerce does come under the Federal Seed Act, however, and may be inspected and sampled at depots or farms. The cooperation of the depot agent or farmer must be secured in either case before proceeding. Most people will usually cooperate if the purpose and value of seed inspection is first explained to them. In making the inspection and taking the sample, complete information should be obtained so that it will be available if it is subsequently found that the seed law has been violated.

If the seed in question comes from a seed company within the State, then the State seed law will apply and complete information should be obtained.

F. Trucker's and Peddler's Seed

1. The inspector should be on the lookout for seed being sold or delivered by truckers or peddlers. If the trucker or peddler can be contacted personally, it will provide an opportunity to explain the seed law and how the trucker or peddler can cooperate in distributing correctly labeled seed in compliance with the seed law. This often provides an opportunity to sample seed which would not be available for sampling in the usual retail channels of trade.

G. Transportation Company Seed

1. The seed inspector should be acquainted with the location of transportation companies, depots, warehouses, or storehouses where seed may be available for inspection as it is received, shipped, or stored. By inspecting seed at such locations it may be possible to stop the movement of illegal seed before it is sold to farmers.

Although transportation or warehousing companies are not involved as owners or labelers of the seed in their possession, they are usually willing to cooperate. They should be informed as to the purpose of the seed law since they are anxious to avoid having merchandise in their possession tied up by a seizure or stop-sale.

H. Auction Sale Seed

1. In most States, seed sold by farmers at auctions or sale barns is required to be labeled to comply with the seed law. The seed inspector

can find auctions by watching for posters, auction notices, newspaper advertisements, or listening to neighborhood news. The requirements of the State seed law should be explained to the auctioneers or companies in the business of conducting auctions. These people, in turn, will be in a position to see that seed is labeled and sold according to law.

An inspector should attend auctions to check on the sale of seed, particularly where seed of the cereals is offered for sale under a variety name, indicating its adaptability as seed. If the seed is in bags, then a label should be attached to each bag; if in a bin, a single label should be displayed on the bin. In taking samples, the rules for sampling and handling the sample should be followed by the inspector.

I. Seed for Processing

1. Seed laws exempt seed intended for processing from the labeling provisions. This exemption applies to seed which is in storage or in transit to a cleaning plant. This does not mean that the seed will not have a label since the identity of the seed should be clearly indicated by labels attached to the bags to be "Seed for Processing." The seed inspector should insist that seed which is in the same area of the warehouse as seed being sold for planting purposes and which is available to customers for examination should be clearly identified as not for sale. If the seed for cleaning is in another part of the warehouse, then the inspector must use some judgment as to the labeling required. The inspector should point out the advisability of clearly identifying such seed.

The label "seed for processing" should not be used on seed shipped to a retail seed dealer with the idea that the retail seed dealer will attach his own labels. The inspector should determine where the seed will be cleaned and by whom. Is there equipment available to do the cleaning? Does the seed apparently need to be cleaned?

J. Certified Seed

1. Seed Certification is the procedure under which farmers produce seed of the improved varieties using specified cultural methods which will assure that the variety does not become mixed with seed of other varieties.

Seed is considered to be certified when (a) it has been determined by a seed certifying agency that such seed was produced, processed, and packaged, and conformed to standards of purity as to kind or variety, in compliance with the rules and regulations of such agency pertaining to such seed; and (b) the seed bears an official label issued for such seed by a seed certifying agency stating that the seed is certified or registered." The rules under which seed is certified vary from State to State.

There are four classes of seed recognized in seed certification; namely, breeders seed, foundation seed, registered seed, and certified seed.

- a. Breeder seed is seed or vegetative propagating material directly controlled by the originating, or in certain cases the sponsoring, plant breeder or institution, and which provides the source for the initial and recurring increase of foundation seed. This seed is not found in retail channels of trade.
- b. Foundation seed, including "Elite" seed in Canada, are seed stocks that are so handled as to most nearly maintain specific genetic

- identity and purity and that may be designated or distributed by an agricultural experiment station. Production must be carefully supervised or approved by representatives of an agricultural experiment station. Foundation seed is the source of all other certified seed classes, either directly or through registered seed.
- c. Registered seed is the progeny of foundation or registered seed that is so handled as to maintain satisfactory genetic identity and purity and that has been approved and certified by the certifying agency. This class of seed should be of a quality suitable for the production of certified seed.
 - d. Certified seed is the progeny of foundation, registered, or certified seed that is so handled as to maintain satisfactory genetic identity and purity and that has been approved and certified by the certifying agency.

There are several different grades or qualities of certified seed. Blue tag or first quality is the color usually associated with certification. Red tag usually denotes second quality. Other colored tags are used to indicate various conditions by the different certifying agencies.

Some States use a "one-tag system" in which the certification label also contains all of the information required on the analysis label. Other States use a "two-tag system" in which the certification label refers only to the certification as to variety and the analysis label is separate and solely the responsibility of the producer or company selling the seed.

Sealing of the bags is required by some States and not by others. In some States the seals must be applied by the inspectors of the certification agency, while in others the producers or processors can seal the bags. In some States the certification labels are attached by representatives of the certifying agency, while in others the labels are sent to the producer or processor to be attached.

To understand what is required in the labeling of certified seed, the seed inspector must know something of the rules of the agency which certified the seed which he is inspecting.

All certified seed is subject to inspection, sampling, stop-sale, or seizure under the State seed laws or the Federal Seed Act. The labeling requirements are the same as for uncertified seed of the same kind.

Certification labels and seals may be removed by the inspector at the time of inspection and sampling if he is prepared to replace any seals and labels so removed with acceptable replacements provided by his supervisor. Seed is no longer considered certified after the original seal is broken unless the seed is resealed by an authorized person, which includes State seed inspectors.

The question often arises concerning the identity of an open bag of certified seed in the hands of retail seed dealers. Technically such seed is no longer "certified seed" but if the dealer keeps the seed in the original bag which has attached the original labels, he may be allowed to represent the seed to customers as certified seed. The customer purchasing such seed from an opened bag is aware of the possible loss of identity and is not misled. No more than a single bag of a lot should be opened thus at a time.

K. Verified-Origin Seed

The origin verification of alfalfa and red clover seed is accomplished by the Seed Verification Service which is administered by the United States

Department of Agriculture. The purpose of the Service is to insure that there is available to the public alfalfa and red clover seed accurately labeled as to origin (place where grown).

Qualified seed firms voluntarily enroll in the Seed Verification Service. These firms by virtue of their membership in the Service are entitled to attach United States Verified Origin seed tags to their lots of alfalfa and red clover seed, if the lots have been verified as to origin by the United States Department of Agriculture. A statement on the verified-origin seed tags indicates that the tags are authorized by the United States Department of Agriculture.

Verified-origin seed tags are printed in red and black on white material. The design and printing used on the two sides of a verified-origin seed tag are illustrated below.

The illustration shows two views of a seed tag. The top view is the front of the tag, which is rectangular with a pointed left side and a circular hole for a string. It contains the following text: "VERIFIED-ORIGIN SEED TAG", "Authorized by the United States Department of Agriculture", "The lot of seed indicated below has been verified as to origin by an inspector of the United States Department of Agriculture. This covers ORIGIN ONLY-NOT VARIETY, QUALITY, PURITY, or GERMINATION.", "Kind of seed _____ Lot No. _____", and "Where grown _____". The bottom view is the back of the tag, which is rectangular with a pointed left side and a circular hole for a string. It contains the text: "U.S. VERIFIED-ORIGIN SEED".

The verified-origin seed dealer prints or writes on the tag in ink (not pencil) the following information:

1. Kind of seed (alfalfa, red clover)
2. Lot number
3. Origin

It is required that the verified-origin seed tag shall not show the name of the variety of seed (e.g., Buffalo, Ranger, Vernal, Grimm, etc.).

The lot designation is required to be stenciled on all bags of verified-origin seed and should agree with the lot number on the verified-origin tag attached to the bag. It is possible that this lot number will not agree with the lot number shown on the analysis tag, since a firm other than the verified-origin seed dealer may have attached the analysis tag.

State seed inspectors can assist the United States Department of Agriculture in determining whether the origin is accurately shown on verified-origin seed tags by collecting information on United States Verified-Origin seed being offered for sale in their respective States. A form similar to the one on page 21 is used to supply this information. This information is utilized by the United States Department of Agriculture in determining whether each lot of seed listed on the form is

Submitted by _____ Address _____ Date _____

*U. S. Verified-Origin Alfalfa Seed is identified by the red and white U. S. Verified-Origin Seed Tag sealed or sewed on each bag.

Agriculture - Washington

accurately labeled as to origin. Additional information on verification may be found in "Instructions and procedures for origin-verification of seed," USDA, PMA, Washington, D.C., 1949. 20 pages, mimeographed.

VII Enforcement Procedures

A. Stop-Sale

1. A "stop-sale" of seed is an administrative proceeding in which a seed law enforcement official serves notice to a vendor of seed that the seed cannot be sold. This may be done by the inspector at the time of inspection or by the State official in charge of enforcement after he receives a laboratory report of a test made on the official sample. The notice may be served by the inspector by attaching a red stop-sale tag to the bags of seed in question or by a written notice sent to the dealer by the seed law enforcement official, with a carbon copy to the inspector in that area.

Release of seed from a stop-sale order should only be on written information from the dealer or the inspector that the law has been complied with. The extent of supervision will depend upon the extent of the violation involved. Technical violations requiring only the issuance of new labels may require less strict supervision than processing or disposal of seed containing noxious-weed seeds.

Appropriate forms and tags should be devised for these various steps to facilitate release of the seed and to make all actions a matter of record. Any notices or agreements made by telephone or verbally should be confirmed in writing so there will be no misunderstanding.

B. Seizure

1. A "seizure" of seed is a legal proceeding in which a court takes possession of seed in violation of the law and sees that it is brought into compliance or disposed of. A seizure of seed by a court is usually preceded by a "stop-sale" action on the part of a State official to insure that the seed will be available for seizure action. Seizure action is seldom used by States but is available and useful under the Federal Seed Act on interstate shipments. If proper relabeling and disposition of seed can be made within the State under a "stop-sale" order there is no necessity for Federal seizure action. If the seed must be transported to another State to be sold or processed or disposed of, Federal supervision of its disposition is desirable.

Federal seizure action can be requested of a district Federal Seed Office by telegram furnishing the following information:

Kind of seed & lot No.	_____	_____	bushels
			or
	_____	bags	_____ pounds
	number		
shipped by	_____	from	_____
	shipper		city and State
on	_____	by	_____
	date shipped		carrier making delivery
		*invoiced	
to	_____	or	_____
		labeled	

*If statement on tag is not consistent with statement on invoice, show both.

Found _____ ** Request seizure _____ bags
result of test number
in possession of _____
firm and city

**If germination is involved, show dates of tests. If not labeled, so state.

Copies of documents to support the seizure action should be forwarded to the Federal field office as soon as possible after requesting the seizure action. These include copies of the seed inspector's report, the State laboratory report, and one of the labels, as well as the official sample.

While the seizure recommendation is being forwarded through channels to the proper Federal court for action, the seed in question should be held under a "stop-sale" order to insure that it will be available for seizure when the United States marshal arrives.

After the seed is seized by the United States marshal, the Federal district court has sole jurisdiction over disposition of the seed and any attempt to move the seed from the premises or to process it without an order from the court may be construed to be in contempt of court.

After the order of the court is issued the State inspector may be requested to supervise the disposition or the processing of the seed as a representative of the United States Department of Agriculture, which is usually designated in the order of the court as the supervising agency. The costs of such supervision are chargeable to the claimant, including salary, per diem, transportation, and seed tests, and may be assessed as part of the court costs. It is preferable, however, for all such costs to be recovered directly from the claimant by the inspector or his department to avoid difficulties in having payment made through the Federal court.

C. Court Trial

1. If the inspector has drawn a sample according to the regulations, has identified the sample, the label, and the seed inspector's report with the sample, has handled and shipped or transported the sample to the seed laboratory promptly, and has properly protected the sample from damage, he should have no difficulties in testifying in court as a witness.

Because it is impossible for an inspector to recall the circumstances surrounding every lot of seed sampled he is usually allowed to use the exhibits entered as evidence or his own records to "refresh his memory."

In testifying in court under cross-examination, the inspector should be careful that he does not testify incorrectly as to the size of the official sample drawn. Testimony that a sample was not drawn in accordance with the rules for sampling may be sufficient to have the case dismissed upon motion of the defendant's attorney. For this reason, the inspector should know the minimum-size sample required to be drawn for each kind of seed and the minimum number of bags which must be sampled.

D. Revocation of License

1. Although a seed inspector may not have any active part in connection with the revocation of a license, it is well to know the general procedure which may be followed in such proceedings. This procedure is usually resorted to only in extreme violations or a series of violations in which the licensee has failed or refused to comply with the seed law. It is a serious action since it may deprive the licensee of a means of making a livelihood. This procedure may be as follows:

The licensee is informed of the decision to revoke his license and is afforded an opportunity for a hearing to answer specific charges.

The hearing may be formal and include testimony such as occurs in the event of a court action or it may be informal depending on the procedures followed in such matters in the individual States. Because a revocation of a license may eventually be appealed to a court for a final decision, it is well to have such an action supported by a formal hearing recorded in such manner that it can be reviewed by a court and used as a basis for the court's decision. Otherwise, the same testimony and evidence may have to again be presented in court.

Insofar as the seed inspector's part in such proceeding, if any, is concerned, it would be similar to that performed as a witness in the court action and the same precautions in testifying should be observed.

VIII State Seed Law

- A. The purpose of the State seed law is to regulate the labeling, sale, offering or exposing for sale, and transportation of seeds within the State for sowing purposes (intrastate commerce) and to prevent the misrepresentation of seeds therein. It applies to transactions taking place within the boundaries of one State.

The inspector should familiarize himself with the labeling requirements, prohibitions, and exemptions set forth in his State seed law and the regulations for its enforcement so as to know what labeling is required for seed whether encountered in the possession of a retail dealer, wholesale dealer, farmer, or transportation company.

Learning answers to the following questions will assist the inspector to become familiar with the requirements and regulations of his State seed law.

1. What seeds are subject to the requirements of the State seed law?
2. Who is responsible for the labeling of seed subject to the State seed law?
3. What information is required on the label for agricultural seed?
4. a. What weed seeds are considered noxious under the State seed law?
b. What are the prohibited noxious-weed seeds?
c. What are the restricted noxious-weed seeds?
5. What are the limitations for restricted noxious-weed seeds?
6. What does the term "label" include?
7. How is the term "advertisement" defined?
8. a. What is required on the label for vegetable seed?
b. What is the difference in the labeling requirements if the seed is below standard in germination?
9. a. What is the difference between "hybrid seed corn" and "open pollinated corn?"
b. What is a hybrid?
10. Does the State seed law require use of a special tag or permit? How are they obtained?
11. Does the State law require tagging of every bag?
12. Is certified seed exempt from labeling?
13. What is meant by the term "treated seed?"
14. a. Does treated seed require special labeling?
b. If so, what?
15. a. Is any seed prohibited from sale?
b. If so, under what circumstances?

16. a. Is it unlawful to alter a label?
b. Is it unlawful to falsely advertise seed?
17. a. What is a "Stop-Sale" order?
b. When should a "Stop-Sale" order be used?
c. How is seed under "Stop-Sale" released?
18. How does a "seizure" differ from a "stop-sale" under the State seed law?
19. a. What seed, if any, is exempt from requirements of the State seed law?
b. Do these same exemptions apply under the Federal Seed Act?
20. a. Who is named as the enforcing officer under the State seed law?
b. What are his duties?

IX The Federal Seed Act

- A. The Federal Seed Act regulates interstate and foreign commerce in seeds. It requires labeling and prohibits misrepresentation of seeds transported from one State to another (interstate commerce), and requires that imported seeds meet certain standards before being admitted into the commerce of the United States (foreign commerce).

Section 417 of the Federal Seed Act authorizes the Secretary of Agriculture to cooperate with any State or department, agency, or political subdivision thereof in carrying out the provisions of the act. Pursuant thereto, the Seed Branch, Agricultural Marketing Service, United States Department of Agriculture, has completed memorandums of understanding with the State seed law enforcement agencies of all the 48 States. Identification cards are issued to State inspectors by the Seed Act Branch authorizing each inspector to take samples of, secure information and records pertaining to, and otherwise inspect seed and screenings subject to the act. These cooperative efforts require recognition of the fine line that separates the jurisdiction and responsibilities of State and Federal law enforcement agencies.

Seed transported from one State to another is in interstate commerce until it reaches its first destination. After coming to rest within a State, seed is subject to the laws of that State until transported from the State.

The Federal Seed Act and the rules and regulations governing its enforcement have been published as Service and Regulatory Announcements No. 156. Each inspector should obtain a copy of this publication. The inspector should be familiar with the differences between requirements of the Federal Seed Act and regulations and his own State seed law and regulations if both statutes are to be enforced with fairness and efficiency. Being able to answer the following questions will help the inspector to become familiar with requirements of the Federal Seed Act.

1. Can seed be subject to both the State seed law and the Federal Seed Act?
2. Who is responsible for the labeling of seed transported in interstate commerce?
3. a. Are special tags required for labeling interstate shipments?
b. What does the term "labeling" include?
4. a. How many containers of a shipment should be labeled?
b. Are there any exceptions?
5. Where should the labeling information be given for seeds shipped in bulk?
6. What is meant by the term "shipped in bulk?"
7. What seeds are subject to requirements of the Federal Seed Act?

8. What does the term "kind" mean?
9. What does the term "variety" mean?
10. What does the term "type" mean?
11. Where may the "kinds" of seed subject to the Federal Seed Act be found?
12. Where may the standards for vegetable seeds shipped in interstate commerce be found?
13. In what respect does the labeling required by the Federal Seed Act for seeds shipped in interstate Commerce differ from that required by your State law?
 - a. For agricultural seed?
 - b. For vegetable seed?
14. a. For what kinds of seeds does the Federal Seed Act require a statement as to origin on the label?
 - b. What does the term "origin" mean?
15. What does the term "hybrid" mean?
16. The Federal Seed Act prohibits the shipment of seed in interstate commerce if more than 5 months have elapsed since the test was completed exclusive of the month in which tested. How does this differ from your State seed law?
17. a. Is Kentucky bluegrass always required to be labeled as to germination?
 - b. What is the period of exemption, if any?
18. What weed seeds does the Federal Seed Act designate as noxious-weed seeds in an interstate shipment?
19. a. What kinds of imported seeds does the Federal Seed Act require to be stained?
 - b. May these be mixed with seed of the same kind grown in the United States?
20. What records is the interstate shipper required to keep?
21. Under what circumstances are seeds shipped in interstate commerce exempt from the labeling provisions of the Federal Seed Act?
22. a. Is the shipper's name and address required to be shown on the label of interstate shipments in all circumstances?
 - b. What exemption is provided?
 - c. Where may a code number be obtained?
23. a. Does the Federal Seed Act prohibit shipment of screenings in interstate commerce?
 - b. Under what conditions is shipment permitted?
 - c. What is the definition of screenings under the Federal Seed Act?
24. a. What does the term "advertisement" mean?
 - b. What constitutes false advertising under the Federal Seed Act?
25. Where is your district Federal Seed Act office located?

X Federal-State Cooperation

The State seed law enforcement agency cannot hold an out-of-State dealer responsible for seed which he ships into the State. The out-of-State dealer is not subject to the State courts unless he chooses to come into the State to stand trial. Under the State seed law the enforcement agency is obliged to hold the seed dealers within the State responsible for seed they buy from out-of-State companies.

In actual practice out-of-State seed dealers generally are willing to cooperate with the seed law enforcement agency and its inspectors in the States where they sell seed. They have found that their customers expect their seed to comply with the State seed law.

The interstate provisions of the Federal Seed Act set forth under section 201 are designed to supplement the seed laws of the States so that seed dealers cannot avoid their responsibility for providing correctly labeled seed when shipping seed in interstate commerce. The Federal Seed Act incorporates part of the State seed laws by recognizing the noxious-weed seed requirements of the State into which seed is shipped.

Cooperation in the enforcement of the Federal Seed Act by the United States Department of Agriculture and the State seed law enforcement agencies is the only way that State seed laws can remain effective. Since it is estimated that approximately one-half of the seed which is sold through commercial channels, at one time or another, moves in interstate commerce and that the percentage is increasing, Federal-State cooperation becomes increasingly important.

Each of the 48 States have agreed through Memorandums of Understanding with the United States Department of Agriculture to report violations of the Federal Seed Act to the Department for investigation. This agreement provides for the following:

The United States Department of Agriculture will:

1. Have general supervision over all enforcement activities conducted thereunder.
2. Authorize State officials, designated by the State, if qualified and mutually acceptable, to draw samples, secure information and records, and otherwise inspect seeds subject to the Federal Seed Act within the State.
3. When necessary and desirable, assist the State in adopting such procedure in its inspection work as will tend to provide evidence acceptable under the Federal Seed Act of violations or irregularities.
4. Reserve the right to make further investigations when deemed necessary within the State and will undertake the responsibility of any investigation required at the points from which shipments were made.
5. Issue written notices or warnings to persons involved in minor violations of the act when such action seems adequate.
6. In the interest of orderly procedure, initiate any formal proceedings under the act or the regulations that appear to be warranted following the investigations.
7. Insofar as facilities permit, make tests on samples of seed submitted by the State for the purpose of standardizing methods of testing seeds.

The State will:

1. Inspect and draw samples of seed subject to the Federal Seed Act within the State.
2. Submit to the representative of the Department
 - a. Samples which represent shipments of seed believed to be subject to and in violation of the act together with available records pertaining thereto; and
 - b. Other information or records indicating that the act has been or is being violated.

It is mutually agreed that:

1. The activities contemplated under the Memorandum of Understanding will be conducted in accordance with the Federal Seed Act

- and the rules and regulations thereunder, supplemented by such instructions as may be issued by the Agricultural Marketing Service.
2. No State official will be expected to proceed beyond the boundaries of the State for the purpose of routine investigations.
 3. The initiation of any formal proceeding under the act or the regulations will be undertaken only by the Agricultural Marketing Service at Washington, D.C.
 4. The memorandum of understanding shall not constitute an obligation upon either party relative to the expenditure of funds.

State seed inspectors should meet at least the qualifications as approved by the Association of American Seed Control Officials. For proper Federal-State cooperation, training and experience for seed inspectors should be emphasized and should receive more attention in the future than it has in the past. Inspectors' "workshops" involving all the inspectors in one State or from several States is a worthwhile project to consider promoting periodically.

Statistics have shown that cooperation between Federal and State officials since the passage of the new Federal Seed Act of 1939 has helped to improve the quality of seed in commercial channels. This cooperation has made it possible for seedsmen and farmers to select their seed supplies with greater confidence in the labeling information.

There are a number of problems that might be mentioned here on which there is a need for improvement in order to provide for greater Federal-State cooperation.

1. Evidence obtained by inspectors must be complete and timely. This means that seed inspectors' reports must bear all the necessary information needed to consider action under the Federal Seed Act and to allege a violation. The sample must be of sufficient size to comply with the regulations in this respect. Its identity must be preserved. It should be handled carefully and forwarded promptly. A uniform seed inspector's report which when completely filled out will furnish all the necessary information is the first and most important step in the direction of obtaining all the evidence needed.
2. Violations to be reported must be based on a consistent policy. Some States report every violation for action under the Federal Seed Act as provided for under the Memorandum of Understanding and most State seed laws. Other States report only violations in which the shipper has refused to make an adjustment with the purchaser. Some states vacillate in their policies depending upon the amount of service testing of samples they may have, the attitude of their superiors, the attitude of seedsmen, etc. Seedsmen cannot be expected to obey the law or to respect it when this wide divergence in enforcement is apparent. There is no doubt that some seedsmen take advantage of their knowledge of these factors. The result is that the States that have a strict enforcement program may receive the highest quality seed and those States with a lax enforcement program may receive the lower quality or questionable quality seed. There is a wide range in the degree of cooperation between the United States Department of Agriculture and the various States in the enforcement of the Federal Seed Act. A study of the cases reported by States in 1957 for action under the Federal Seed Act indicates that 16 States submitted 93 percent, 5 States 67 percent, and 2 States submitted 45 percent. A part of this erratic distribution is undoubtedly due to the fact that some

States are producing States and therefore are engaged principally in shipping seed out of the State. Other States are principally consuming States. There appears to be need for considerable work in obtaining more uniform participation among the various States in the enforcement of the Federal Seed Act. Because of this variation in seed law enforcement within the States, it follows that the Federal Seed Act, although a Federal statute which should apply equally to all citizens, both buyers and sellers, is being enforced more rigidly in some States than in others. In some States it is not being enforced at all. In other words, the funds being expended in the enforcement of the Federal Seed Act are not equally distributed to the benefit of all States or all persons entitled to such protection.

3. Seizure and Stop-Sale actions should be consistent. Although it is generally known that inspectors in the enforcement of their State seed laws make frequent use of the Stop-Sale provisions of the law, violations for the purpose of seizure action under the Federal Seed Act are infrequently referred to Federal Seed Act officials.

There is general agreement that if seed can be relabeled and sold within the same State under supervision, there is seldom need for a Federal seizure action. If, however, seed must be transported out of the State to be sold or to be processed before it is in condition to be sold, or if it is of such low germination or so heavily contaminated with weed seeds that it is worthless for seeding purposes, then it appears that seizure action under the Federal Seed Act is justified. Agreements made between State officials and interstate shippers as to the disposition of seed returned to the shipper's State may or may not be carried out. Worthless seed returned to the shipper without any supervision may be resold to another purchaser in another State where seed law enforcement may not be quite so strict. The value of Federal seizure is that the seed is under supervision of a Federal court thus guaranteeing that whatever disposition is agreed to by the claimant will be carried out.

4. Seed in foreign commerce sold within a State. Because seed which is imported is considered to be in foreign commerce until it is released into the commerce of the United States, some lots of seed are moved between States under bond before they are released or are sold within the State into which they are imported and thus are never in "interstate commerce." Such seed is not subject to section 201 of the Federal Seed Act although it may have passed the import requirements of the act. The labeling of such seed is entirely left to the jurisdiction of the State seed laws. The importation of seed into a State which prohibits its sale because of the presence of noxious-weed seeds, when the presence of the same seeds did not prohibit the importation of the seed, demonstrates a lack of coordination in the State laws and Title III (Foreign Commerce) under the Federal Seed Act.

XI Cooperating Agencies

Seed certifying agencies
Agricultural experiment stations
Public health officials
Post Office Department
Agricultural Stabilization and Conservation Committee
Bureau of Land Management

These six agencies can give active support to the seed inspector who has a problem with a particular lot of seed, which is or has been under one of the agencies' jurisdiction.

Other agencies, such as associations or societies of seedsmen, seed analysts, and agronomists, can give moral support to requests for more and better seed inspection, to more uniform State seed laws and to more uniform interpretation and enforcement of such laws.

XII New Techniques

A. TETRAZOLIUM TESTING

*GENERAL TECHNIC

**(R. P. Moore and Ewald Smith)

- Step 1. Precondition seeds for soaking by keeping them in a slightly moist towel until all seeds have softened. Slow absorption of moisture by this method prevents fracturing of seed structures. Seed coats of hard seed should be punctured so as to permit absorption of moisture prior to soaking.
- Step 2. Soak the preconditioned seeds in warm water (70-85°F) until thoroughly swollen. This may require 6 to 24 hours, depending upon the kind of seed. A rough estimate of seed quality may be obtained by noting clearness of water at completion of soaking period. Low quality seed tend to give rise to turbid water.
- Step 3. Prepare soaked seed for tetrazolium staining.
 - a. Many kinds of seeds may be tested without removal of seed-coats. They include garden peas, snapbeans, soybeans, cabbage, cowpeas, clovers, alfalfa, turnips, mustard, etc.
 - b. Certain kinds of seeds stain more satisfactorily and much more rapidly after slitting or removal of seedcoats. They include peanuts, cotton, tobacco, crotalaria, sesame, lettuce, tomatoes, and pepper. Since injuries frequently occur at time of seedcoat removal, it is suggested that emphasis be placed upon staining of seed without removal of seedcoats. With experience an analyst can soon learn to identify his own handling injuries, thus using method (b) more frequently to speed up staining processes.
 - c. Large-seeded grasses -- corn, wheat, oats, barley, rye, millets, sorghum, etc. should be cut longitudinally through the mid-section of the embryo so as to expose cut surfaces of coleoptiles, plumules, mesocotyls, primary roots, and coleorhiza. The cut can be made so as to expose the structures either along the side or at the bottom of the embryo. The bottom exposure has the advantage of permitting full obser-

* This is a condensation of Moore and Smith's detailed instructions and are presented to stimulate the interest of seed inspectors in this procedure. Since the developments in this field are progressing rapidly, any serious attempt to use this method will require more complete references and study.

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vation of the upper surface of germs where mechanical injuries are most prevalent. Only the upper half of the germ is to be tested when this method is used. In the side exposure, one seed half is normally tested.

- d. Small-seeded grasses -- timothy, bluegrass, ryegrass, fescue, and lovegrass, should have glumes removed if present so as to expose the germs. The seedcoats should generally be punctured immediately below or near germs to promote rapid and uniform staining.

Step 4. The prepared seeds should be placed in suitable containers and covered promptly with a tetrazolium solution (1/2 to 1% by weight in water). During the testing period the seeds should be stored in a warm dark place. Staining requires approximately 2 to 18 hours depending upon kind of seed, method of preparation, and temperature of solution. Temperatures of 70° to 85°F have been found satisfactory. At the end of the test, the clearness of the tetrazolium solution supplies another rough estimate of seed quality. Analysis of detailed structure study is the basis for test.

Step 5. Stained seed should be removed from tetrazolium and kept in water until time of reading. If readings are to be delayed for several hours the seeds should be refrigerated, or a sterilant should be added to the water.

KNOWLEDGE OF SEED STRUCTURE IMPORTANT

The inexperienced analyst must start with incomplete basic information that seeds which stain red tend to be alive, and those that remain colorless are usually dead. This simple knowledge works fairly well for many kinds of seeds.

GENERAL INSTRUCTIONS FOR INTERPRETING TETRAZOLIUM TESTS

1. Tetrazolium, when dissolved in water, is colorless. It changes into a reddish compound under certain conditions. These conditions include:
 - a. Prolonged exposure to weak light, or brief exposure to strong light.
 - b. When combined with free hydrogen.
 - c. When combined with certain compounds.
2. Normal respiration processes in every living cell release free hydrogen which readily changes tetrazolium into a water-insoluble reddish compound.
3. Normal respiring and non-injured tissues give rise to a slowly developing, clean-reddish substance.
 - a. If deterioration has been largely suppressed or of recent occurrence, bruised tissues may rapidly develop a dark red color. At more advanced stages of deterioration the tissues may remain colorless. Bruised tissues may shrink readily upon exposure to air.
4.
 - a. The germination percent shall include seeds which stain normally without signs of injury or aging.
 - b. The germination percent shall include seeds which show minor or non-critical injuries and symptoms of aging which are in the

judgment of the analyst capable of developing into seedlings under favorable germinating conditions.

- c. Non-germinating seeds shall include all seeds that for one reason or another could not develop into countable seedlings. Most of these seeds will exhibit various forms and degrees of life. With many sources of seed, mechanical injuries will be noted as a major cause for non-germinating seeds.

5. Each kind of seed may differ slightly. A thorough knowledge of grass- and legume-types of seed will supply a satisfactory background in dealing with most kinds of commonly used seeds.

Experience is needed to develop a high level of perfection in studying seed quality by means of tetrazolium tests. Workers, who are willing to keep an open mind while learning the method, will soon have at their command an interesting and highly informative method of determining the ability of seed to germinate. The tetrazolium method is not proposed as a perfect test for use by seed inspectors since "abnormal sprouts" are all counted in the tetrazolium test. This margin of error, however, is in favor of the seedsman. Therefore, if seed is still found to be mislabeled by this test, there can be little doubt that the tetrazolium test will be supported by the required seed laboratory test.

SOURCE OF TETRAZOLIUM

The chemical most commonly used, 2,3,5-triphenyltetrazolium chloride may be purchased from the following companies at a cost of approximately \$0.25 per gram.

1. Paul-Lewis Laboratories, Inc., 4253 N. Port Washington Avenue, Milwaukee 12, Wisconsin.
2. Nutritional Biochemical Corporation, Cleveland 28, Ohio.

(Chemical is furnished as powder. A water solution can be made by dissolving 2-3 grams of powder in approximately 1 pint of water. Solution should be stored in a dark bottle.)

B. "SPEED-UP" SYSTEM ON OFFICIAL SAMPLES

The handling of official samples in the laboratory greatly affects the efficiency of an enforcement program. The inspector must get the sample to the laboratory in the most expedient manner. The Post Office Department provides a "Special Handling" service on fourth class mail whereby an additional fee may be paid for the privilege of sending fourth class mail in the same bag with first class mail. The use of this service will get most samples to the laboratory overnight. It is, of course, up to the inspector to be familiar with mail schedules in order to get the best service. A post office pickup will also be of value in cutting down on the time required for receiving the samples in the laboratory.

Once the samples are in the laboratory they should be handled in a manner whereby all discrepancies can be detected and Stop-Sale notices issued by wire or phone direct to the dealers on the same day that the samples are received in the laboratory. This may be facilitated as follows:

Assign top analyst or analysts to examining samples and classifying them on the basis of quality and as to the order in which they should be

tested. Samples are to be classified and tested in the following order:

1. Those which are definitely mislabeled.
2. Those for which the labeling is questionable.
3. Those which appear to be labeled satisfactorily.

Stop-Sale orders on the basis of purity should be issued immediately upon completion of the tests. Such orders should indicate that the germination is incomplete and will be reported later.

Interstate Shipments

All interstate shipments of seed are subject to sampling under the Federal Seed Act upon arrival, even though the State dealer may not be offering the seed for sale immediately.

The sampling of such seed is very desirable. This can be facilitated by a cooperative agreement with State wholesalers. Such an agreement calls for their notifying the inspector of the arrival of interstate shipments and agreeing to withhold the seed from sale until the purity test is completed and, when possible, the germination test. In reciprocation for this accommodation, you and your laboratory agree to handle the samples as expediently as possible. This arrangement enables the seedsmen to use the shipper's test as a basis for his own label without the risk that he would otherwise take. Due to variations within some lots of seed, it is still necessary that the inspector spot check this seed after it moves to the retail level.

The advantages of the above are:

1. It enables you to check larger quantities of seed with fewer tests.
2. It prevents the movement of mislabeled seed to the retail level and to the farmer before you have detected the discrepancy.
3. Out-of-State shippers will soon become aware of your cooperative agreement and consequently will be careful of what they ship into your State.
4. It will give you a better coverage of seed subject to the Federal Seed Act. When sampling is confined to retail outlets, the labeling by your State dealer may obscure the fact that the seed originated from out of State. This may not be true in States where origin is required on all kinds.
5. It gives the inspector and the laboratory a "head start" on the normal official season, for most wholesalers begin receiving their out-of-State supply from a month to 6 weeks prior to the time that the same kinds will be moving at the retail level. This will depend on the current supply and demand.

C. PACKET SAMPLING

When inspectors draw their regular composite samples from a lot of seed they should take, in addition, packet samples from individual bags at random throughout the lot from about each 25th bag in the lot. If there are a small number of bags in the lot the ratio might be greater as to the number of individual packet samples taken. Ordinarily, for lots with less than 25 bags, packet samples are not drawn unless the inspector has reason to believe that the lot is not uniform. When checked in the laboratory these individual-bag samples are examined and tested for uniformity as regards the labeling on the tags. Ordinarily, individual-bag tests for

germination on all of the samples would only be done where it was thought the lot might not be uniform as to germination. For large seeds, such as soybeans, etc., where the rules call for at least a 2-pound sample for an official test, do not take this large a sample in your original sampling since it would cause considerable complaint from the seed dealers. Take about a 200-gram sample from the individual bags in such cases, and if the lot is found to be not uniform, then if it is necessary, go back to take the regulation-size sample.

