

SECTION 1: SAMPLING

Seed testing begins with the sampling process. No matter how accurately an analysis is made, it can show only the quality of the sample submitted; therefore, it is the responsibility of the seed sampler to assure that the sample is representative of the seed lot.

1.1 General procedure

- a. To secure a representative sample, equal portions shall be taken from evenly distributed parts of the quantity of seed to be sampled. Access shall be available to all parts of that quantity.
- b. For free-flowing seed in containers or bulk, a probe or trier long enough to sample all portions of the container shall be used. The trier should be able to remove an equal volume of seed from each part of the container through which the trier travels. Partitioned triers should be used when sampling vertically in the containers. Non-partitioned triers must be inserted into the containers diagonally or horizontally and should never be used when sampling vertically from the containers.
- c. Non-free-flowing seed, such as chaffy grasses, uncleaned seed, large fragile seed, screenings, and seed with a low moisture content, that are difficult to sample with a probe or trier can be sampled by the hand sampling method. When a sample is taken by hand, insert the hand straight with the fingers together. Keep the fingers together as the hand is closed and withdrawn. Hand samples should be taken from various locations in the containers. Additionally, coated seed, seed mats, and seed tapes can be sampled by hand.
- d. Each probe, trier, or handful of seed removed from the lot is considered a primary sample. Each primary sample should be visually checked for uniformity. When the primary samples appear to be uniform, they shall be combined to form the composite sample prior to submission for testing. If non-uniformity is observed in the primary samples, the sampler should either discontinue sampling and advise management of the findings or continue sampling being sure to record the observations of non-uniformity on the sampling documentation.

1.2 Sampling equipment

The sampler must determine the most appropriate sampling tool and technique for the particular sampling situation. Manual sampling tools should be able to reach all portions of the container and have openings at least two and one half times the maximum diameter of the seed and possible contaminants that could be within the lot being sampled. Types of triers which can be utilized are the Nobbe type, open tube single sleeve, open tube double sleeve, non-compartmentalized double sleeve, compartmentalized double sleeve, and the pelican type sampler.

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Note: The trier commonly referred to as the “Thief Trier” is not appropriate for obtaining a representative seed sample, because it obtains seed only from the outermost portion of the container.

1.3 Obtaining a sample for submission

a. Seed in containers (typically packaged in 60 pounds or less)

- (1) When more than one probe or trier of seed is drawn from a container, follow different paths. When more than one handful is taken from a container, take them from well-separated points.
- (2) For lots of one to six containers, sample each container and take at least five primary samples.
- (3) For lots of more than six containers, sample five containers plus at least 10% of the number of containers in the lot. Round numbers with decimals to the nearest whole number. Regardless of the lot size, it is not necessary to sample more than 30 containers.

Number of containers in lot	Minimum number of containers to sample	Number of containers in lot	Minimum number of containers to sample	Number of containers in lot	Minimum number of containers to sample
1 - 4	1.3 a.(2) above	75 – 84	13	175 – 184	23
5	5	85 – 94	14	185 – 194	24
6	6	95 – 104	15	195 – 204	25
7 – 14	6	105 – 114	16	205 – 214	26
15 – 24	7	115 – 124	17	215 – 224	27
25 – 34	8	125 – 134	18	225 – 234	28
35 – 44	9	135 – 144	19	235 – 244	29
45 – 54	10	145 – 154	20	245 or more	30
55 – 64	11	155 – 164	21		
65 – 74	12	165 – 174	22		

b. Seed in mini-bulk containers (typically containing 1,000 to 3,000 pounds)

Lot Size	Number of primary samples to be taken
1 Container	At least 5 primary samples from different sections of the container.
2 – 10 Containers	At least 6 primary samples. If fewer than 6 containers are in the lot, an equal number of primary samples must be taken from each container.
11 Containers or more	At least 6 primary samples, each sample drawn from a different container.

c. **Seed in bulk (such as storage bins, dump trailers, grain tanks, and storage sheds)**

To obtain a representative sample, take at least as many primary samples as if the same quantity of seed were in containers of a size customarily used for such seed. Take the primary samples from well distributed points throughout the bulk.

d. **Seed in small containers (such as packets, tapes, mats, and small package lawn seed)**

When it is not practical to sample seed in small containers using routine procedures, the combined contents of multiple containers or entire unopened containers in sufficient number to supply the minimum size sample as required in section 1.4 may be taken to supply the sample for testing.

e. **Seed packaged in combination products**

For seed lots containing a high percentage of mulch or fertilizer or both and are difficult to sample with typical sampling equipment, it is permissible to take entire unopened containers of sufficient number to supply a minimum sample size as required in section 1.4. The contents of a single container or the combined contents of multiple containers of the same lot shall be considered representative of the entire seed lot sampled.

1.4 Size of sample

a. **The following are minimum weights for samples of seed to be submitted for analysis, test, or examination**

- (1) Sixty (60) grams (approximately 2 ounces) of grass seed not otherwise mentioned, alsike or white clover, or seeds not larger than these.
- (2) One hundred fifty (150) grams (approximately 5 ounces) of alfalfa, crimson or red clover, flax, lespedezas, millet, rape, ryegrasses, or seeds of similar size.
- (3) Five hundred (500) grams (approximately 1 pound) of proso millet, sudangrass, or seeds of similar size.
- (4) One thousand (1,000) grams (approximately 2 pounds) of cereals, vetches, sorghums, or seed of similar or larger size.
- (5) Vegetable and flower seed samples (as categorized by the AOSA Rules for Testing Seeds Vol. 3. Uniform Classification of Weed and Crop Seeds) shall consist of at least 400, and preferably at least 800, seeds per sample. For official samples being obtained and submitted for regulatory compliance testing, the minimum sample size shall be a minimum of 800 seeds. If a purity analysis or a

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noxious-weed seed examination is required, the submitted sample shall provide at least the minimum weights of working samples set forth in section 2.4.

- (6) Tree and shrub seed samples (as categorized by AOSA Rules for Testing Seeds Vol. 3. Uniform Classification of Weed and Crop Seeds) shall consist of at least 600 seeds per sample for germination purposes (1,000 seeds for paired tests). If a purity analysis or a noxious-weed seed examination is required, the submitted sample shall provide at least the minimum weights of working samples set forth in section 2.4.
- (7) Coated, encrusted, or pelleted seed (coated units: refer to 3.8a) submitted for testing shall consist of at least: 7,500 coated units for a purity analysis, 30,000 coated units for a noxious-weed seed examination up to a maximum of 2,000 grams, or 1,000 coated units for a germination only test. Refer to sections 3.8 and 6.8 l.

b. **Individual-container samples being tested for uniformity**

The size of any individual-container sample to determine uniformity in a seed lot shall be not less than the quantities indicated in the column “Minimum weight for noxious-weed seed or bulk examination” for the respective kinds of seed listed in Table 2A. If the sample drawn is larger than required, it shall be thoroughly mixed before it is divided to the desired size.

1.5 **Forwarding of seed samples to laboratory**

- a. After the appropriate number of primary samples for the size of the seed lot are drawn and combined into the composite sample, the entire composite sample is submitted to the laboratory. If the composite sample is too large, or if the composite sample is to be split into duplicate samples for submission to the same or different laboratories, the composite sample must be thoroughly blended and then split by an appropriate mechanical or non-mechanical method (refer to section 2.2).
- b. The person who samples the seed shall insure that the seed sample container is appropriately closed and sealed, if required, is identified in such a manner as to correlate with the sampling documentation, and is initialed and dated. Treated seed samples should be packaged in nonporous containers and be identified with the name of the applied seed treatment.
- c. Samples submitted for moisture testing or mechanical seed counts shall be packed in moisture-proof containers.
- d. Coated, encrusted, or pelleted seed shall be forwarded in firmly packed crush-proof, moisture-proof containers.

- e. Seeds are living organisms that can suffer damage in transit. Whenever possible, care should be taken to minimize damage during transit to the laboratory.

1.6 Principles and procedures are found in the following literature:

- a. Association of American Seed Control Officials. 2006. AASCO Handbook on Seed Sampling.
- b. Federal Seed Act Regulations. 2011. Sampling in the Administration of the Act, Sections 201.39 – 201.44.

1.7 Receipt of seed samples in the laboratory

Upon arrival to the laboratory, the condition of the sample containers should be noted. Refer to section 15 q. when the size of the submitted sample is less than required in section 2, Table 2A, column 4.

1.8 Storage recommendations of seed samples after testing.

Submitted samples on which a Report of Analysis has been issued should be kept by the laboratory for at least one year after testing is completed as part of the record of the seed sample and to provide for re-testing by the original or by another seed testing laboratory, if necessary, to support the original findings. When a purity analysis, noxious weed seed examination, or bulk examination is conducted, all contaminants found should be retained as part of the record for that sample. It is recommended that enough pure seed be retained for a germination retest. In the case of expensive seed at least 25 seeds to verify identity should be retained and the remainder may be returned to the customer upon request. It is strongly suggested that the storage facility be such that environmental conditions are not detrimental to the seed being stored and should be insect and rodent free.