



GUIDE FOR INTERPETING A REPORT OF ANALYSIS

When a seed sample is submitted to a seed laboratory for testing, a report of analysis (ROA) is issued after testing is completed. The layout of the ROA and where information appears can vary from one laboratory to another. Most of the reports issued fit into two general layouts: box style or a line style.

Each report will be signed by a designated individual at the issuing laboratory. An individual can verify that the signer is accurate by going to:

Certified Seed Analyst's (CSA): www.analyzeseeds.com/aosa-member-directory

Registered Seed Technologist's (RST): www.analyzeseeds.com/scst-member-directory

There is minimum information that a laboratory is required to have on the report of analysis. Laboratories can report additional information if it is truthful and isn't misleading.

The following is an explanation of the information that can be found on an ROA, where it is and what is needed for labeling purposes:

- 1. Laboratory Information.** Name and the contact information for the seed laboratory issuing the report of analysis.
- 2a. Name and Address of Sender.** Sender of the sample, including contact information such as name and mailing address.
- 2b. Sender's or Customer's Information.** This is the information the sender or customer provides to the laboratory to identify the sample. The kind of seed identified by the customer to common and/or scientific name will appear here. Along with other information provided by the sender such as: variety name, lot identifier, number of containers or bags, and any other additional information the customer chooses.
- 3. Date received.** The date the seed laboratory received the sample and entered in their system to begin the testing requested.
- 4. Date issued/Date Reported/Report Date.** Date the report of analysis was printed or issued by the laboratory. This information may also appear towards the bottom of the report by the signature line.
- 5. Lab number or Test number.** This is a unique number that the laboratory uses to identify the seed sample as it is processed through the laboratory. If the laboratory is contacted with questions, this number will assist them in finding the sample in question.
- 6. Purity Analysis.** All seed offered for sale must have a purity analysis. The seed being considered or tested will be listed here by common name and/or scientific name as identified by the laboratory. The purity analysis consists of four components. This is information that is required to appear on the ROA if the test is requested.

6a. Pure Seed %. Percentage by weight of the kind of seed being tested or considered, excluding inert matter and all other seeds not being considered. The percent of pure seed is required to be included on the label of seed being offered for sale.

6b. Other Crop Seed %. Percentage by weight of seeds of plants grown as crops found other than the kind under consideration. If any single kind of other crop seed is found in excess of 5% by weight, then the sample becomes a mixture. The percent other crop seed is required to be included on the label of seed being offered for sale.

6c. Inert Matter %. Percentage by weight of all material or matter not seed and also broken seeds less than 50% of the original size. Examples: plant material, soil, rocks, insects, rodent material, fungal bodies. The percentage of inert matter is required to be included on the label of seed being offered for sale.

6d. Weed Seed %. Percentage by weight of seeds of plants recognized as weeds by laws, official regulations, or general usage. The percent of weed seed is required to be included on the label of seed being offered for sale.

6e. Grams Analyzed. Weight of seed that is required to be analyzed to determine the percentages of the four purity components (6a, 6b, 6c, and 6d). Laboratories must examine approximately 2,500 seeds for a purity analysis.

7. Other Crop Seed. At a minimum, the common name and/or scientific name of crop seeds other than the kind being considered are required to be listed here. The number found and/or the rate of occurrence (number per pound) based off the purity grams analyzed (6e) may also be listed here.

8. Inert Matter. Listing the type of inert matter is not required. If this information is present, it will list the type of inert matter found. Example: broken seeds, plant material, ergot, soil.

9. Weed Seeds. At a minimum the common name and/or scientific name of weed seeds found are required to be listed here. The number found and/or the rate of occurrence (number per pound) based off the purity grams analyzed (6e) may also be listed here.

10. Noxious Weed Examination. This examination involves searching for weed seeds that are considered prohibited or restricted by state or federal seed laws. This information is required to appear on the report if this test is requested. The USDA has a publication available entitled "State Noxious Weed Seed Requirements" that is available in a pdf and excel version. This publication is available at www.ams.usda.gov/rules-regulations/fsa

10a. Type of noxious weed seed examination. This is the type of noxious exam being conducted including the name of the region (state, providence, country, etc.) and if there are any exclusions. The most common type of noxious examination conducted is for all fifty US states or all fifty US states excluding Alaska and Hawaii. It is also very common to see just an individual state listed. If seed is being sold across state lines, it is critical that an all states noxious exam be conducted.

10b. Noxious grams analyzed. Weight of grams that must be analyzed. It is used to determine the rate of occurrence (number per pound) for the noxious weed seed examination. Laboratories must examine approximately 25,000 seeds for a noxious examination.

10c. Noxious weed seeds. This is where the noxious weed seeds found will be listed by common and/or scientific name. Also required to be listed in this area is the number found and the rate of occurrence (number per pound) for each species found. The number per pound will typically be listed as #/lb. The name and rate of occurrence for each noxious weed seed species found is to be used to label seed being offered for sale.

11. Germination or Viability Analysis. This is the area that contains the information that is critical for planting and field emergence. The Germination percentage is required to be reported on the ROA if the test is requested. Dormant seed and hard seed percentages are required to be reported on the ROA if they are present in a germination test.

11a. Germination or Germ %. Percentage of seedlings that will potentially produce a normal plant under ideal growing conditions. This is also the information that will be used to label the germination on seed being offered for sale.

11b. Dormant Seed %. This is the percentage of viable seeds (seeds that have the potential to grow) excluding hard seeds that fail to germinate under favorable conditions. A Tetrazolium test (TZ) is usually conducted at the end of the germination test to differentiate between a dead seed and a dormant seed. This information may be required to be present on a label in addition to the germination or germ %. Check the appropriate state seed law labeling requirements.

11c. Hard Seed %. Percentage of seeds which remain hard at the end of the test period because they have not absorbed water due to an impermeable seed coat. This information may be required to be present on a label in addition to the germination or germ percentage. Check the appropriate state seed law labeling requirements.

11d. Total Viable %. This is the maximum potential of seeds that have the capability of producing a normal plant. Total viable = Germination % + Hard seed % (if applicable) + Dormant Seed % (if applicable). This information is not required on the report of analysis so it may not appear on all reports.

11e. Number of Seed Tested. The AOSA Rules for Testing Seeds require that 400 seeds be tested for a single component germination test. If the sample being tested is a mixture, any component that comprises more than 15% (by weight) of the mixture 400 seeds must be tested. If a component comprises 15% or less (by weight) of the mixture a minimum of 200 seeds must be tested. This information is not required on the report of analysis so it may not appear on all reports.

11f. Days Tested. This is the number of days that the seed was tested for the germination test. This number does not include any days that the seeds were prechilled to assist in breaking dormancy. This is not required to be on the ROA.

11g. Date completed or germ test date. This is the date that the germination test was completed. This is the month and year that is used on the label for the date tested. This information may also appear towards the top of the report by the sender's information. This information is required on the report of analysis.

11h. Abnormal %. This is the percentage of seedlings that did not contain all the essential structures (roots, shoot, etc.) necessary to produce a normal healthy seedling. This is supplemental information

and is not required on the report. Not all report of analysis will contain this information. This number should **NOT** be added to the germination % for labeling purposes.

11i. Dead %. This is the percentage of seeds that failed to germinate when given ideal growing conditions and are not dormant or hard. This information is not required on the report of analysis. Not all lab reports will contain this information.

11j. Tetrazolium Test (TZ) %. If a TZ test is conducted, you will find the percentage of viable seeds listed typically under the viability analysis/germination heading. It may also be listed under comments or other determinations. The percentage of hard seeds that remain in a TZ test are also required to be reported. The TZ percentage represents the percentage of seeds that have the capability of producing a normal plant, not that they will necessarily produce a normal plant. A germination test should be requested as well.

11k. Pure Live Seed (PLS) %. Some species are sold off a pure live seed basis. This takes into account the pure seed percentage and the results from the germination test.

$$\text{Pure live seed} = \frac{(\% \text{ germination} + \% \text{ hard seed} + \% \text{ dormant seed}) \times \% \text{ pure seed}}{100}$$

12. Comments. Where the laboratory may make observations that they see that pertain to the quality of the seed. Results of additional tests that are not required to appear on the ROA may be listed here as well. If the sender does not indicate that the seed is treated, coated, pelleted, film treated, or encrusted, this information may appear here as the lab is required to report such information. Other information that may appear here is the germination methods used.

13. Other Determinations. This is where the laboratory will report the results of additional test that are not required to appear on the report. Examples: seed counts, vigor tests, moisture tests.

14. Rules Followed Other Than AOSA. A laboratory is required to follow the AOSA Rules for Testing Seeds. At times there may be a situation where the rules may not be followed at the request of the customer, the species is not in the rules, or another seed testing organizations methods may have been used (Canada M&P or ISTA Rules). If a lab deviates from the AOSA Rules they must state here which test was not conducted according to the rules. The lab must then also state what the AOSA Rules is and how they deviated from that rule.

15. Signature. The report of analysis should contain the signature of the responsible individual. Typically, a title will appear here as well for the responsible individual. In the case of an RST, a seal number or the seal stamp itself will appear in the signature area. The SCST insignia or an AOSA insignia may also appear near the signature line. The validity of the responsible individual can often be verified under the membership section of the AOSA/SCST website: www.analyzeseeds.com

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Issuing Laboratory Name – Address – Contact Information
Report of Seed Analysis (AOSA Template)

NAME AND ADDRESS OF SENDER:

Date received 3	Date issued 4	Lab/Test no. 5
SENDERS INFORMATION* Kind: Variety: Genus/species: Lot number: Size of lot: Field/bin number: Other: 2b *The information provided here is that of the sender and not of the laboratory		

6

PURITY ANALYSIS

6e Grams analyzed)

PURE SEED COMPONENT(S):

VIABILITY ANALYSIS

11

Germ-ination %	Dor-mant %	Hard Seed %	Total Viable %	No. Seeds Tested	Days Tested	Date comple ted	TZ %	PLS %
11a	11b	11c	11d	11e	11f	11g	11j	11k

COMMENTS:

12

6b Pure Seed: 6a %
 6c Other crop seed: %
 6d Inert matter: %
 Weed seed: %

OTHER CROP SEED:
 Kind

7

INERT MATTER:

8

WEED SEED:
 Kind

9

RULES FOLLOWED OTHER THAN AOSA:

14

10 (EX: ALL STATE)* NOXIOUS WEED SEEDS
 10b Grams analyzed)
 No. Found No./lb.

10a

10c

*(except 10a)

OTHER DETERMINATIONS:

13

SIGNATURE:

15

Name, Title and/or Seal #

The purity and germination test results reported on this form have been carried out in accordance with AOSA Rules unless otherwise specified. Test results reflect the condition of the submitted sample and may not reflect the condition of the seed lot from which the sample was taken.

Box style Report of Analysis example

1
Lab Name and Address

Date Received 3 Report Date 4 Lab Number 5

Customer Information:
2a 2b

Viability Analysis 11

Component	Germ	Abnormal	Dead	Hard	Dormant	Total Viable	Germ Test Date
	11a	11h	11i	11c	11b	11d	11f

6 Purity Analysis

Purity Grams 6e

Pure Seed	Weed Seed	Other Crop	Inert Matter
6a	6d	6b	6c

Other Crop Seeds: 7

Weed Seeds 8

10
Noxious Exam:

Grams: 10b Noxious Tested for: All States excluding HI and AK 10a

10c

Comments: 12

Other Determinations: 13

Rules followed other than AOSA 14 15

Name, Title, and/or Seal #

Line style Report of Analysis example