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When to Retest

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When To Retest

- I. Retest when the range of 100 seed replicates of a given test exceeds the maximum tolerance range.

To find the germination percentage you must average all replicates and report the percentage including any fractions, such as: 90.25%, 87.50%, 89.75%.

To find the germination for the purpose of computing the percentage of germination to be used in determining the maximum tolerance range you drop the fraction if less than one-half but increase to the next whole per cent if the fraction is 0.5 or more.

- Step 1. Average per cent germination eliminating fractions.

Should replicate be 25 seed or 50 seed you must combine in a similar combination to form one hundred seed replicates. The replicates closest together in the germinator should be combined.

- Step 2. Refer to Table 2 and find the average germination figure in either column A or B. Read across to the number of one hundred seed replicates for the maximum tolerance range.

- Step 3. Compare the tolerance range with the difference between the lowest replicate and the highest replicate. Should the permitted tolerance range be greater than the difference between the lowest and highest replicates the test is considered valid and may be reported. You must report the germination including any fractions.

Should there be greater difference between the lowest and the highest replicates than the maximum tolerance range, you proceed to Step 4.

Step 4. Should the test have consisted of only two hundred seed, then the germination test must be reported.

Should the test have consisted of three or more hundred, then the lowest of the replicates is omitted in recalculating the percentage of germination. Repeat Step 2 and Step 3.

Step 5. Should the maximum tolerance range be greater than the highest and lowest replicates, the new germination figure (including any fraction) is reported.

Should the difference in the highest and lowest replicates be greater than the maximum tolerance range, the test must be repeated.

Example 1.

Rep. 1	Rep. 2	Rep. 3	Rep. 4
90	80	86	85
85		85.50	
Germination	85.25%		
Range in replications	10		
Maximum tolerance	14		

The germination is considered valid and you may report 85.25% germination.

Example 2.

Rep. 1	Rep. 2	Rep. 3	Rep. 4
96	85	81	90
90.5		84.5	
Germination	88%		
Range	15		
Maximum tolerance	13		

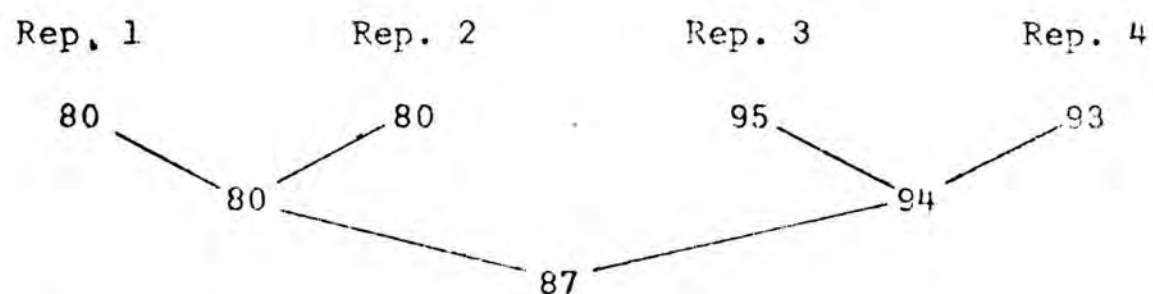
The range is greater than the maximum tolerance range; therefore, the lowest must be omitted.

Example 2 (continued)

Rep. 1	Rep. 2	Rep. 3	Rep. 4
96	85	81	90
Average germination		90.33%	
Germination		90	
Range		11	
Maximum tolerance		11	

The test is now considered valid and the germination of 90.33% may be reported.

Example 3.



Germination	87
Range	15
Maximum tolerance	13

The lowest one must be omitted.

Rep. 1	Rep. 2	Rep. 3	Rep. 4
80	80	95	93
Average germination		89.33%	
Germination		89	
Range		15	
Maximum tolerance		11	

The range is greater than the maximum tolerance; therefore, the sample must be retested. You may not report the results and you may not omit another replication.

Example 4.

Rep. 1		Rep. 2
80		92
Germination	86	
Range	12	
Maximum tolerance	11	

The sample must be retested. You may not omit one replication when only 200 seed are planted.

II. Retest when there are indications that a reliable test has not been obtained because

1. The presence of hard or firm seed in samples not normally recognized as having hard or firm seed.
2. There is evidence of improper test conditions, such as extreme environmental conditions (moisture, light, temperature, oxygen).
3. Error in seedling evaluation. Should there be any doubt as to the number of seed planted or counted, a new test must be made.
4. The presence of excessive fungi or bacteria. A sample carrying fungi to the extent that it is difficult to make a count should be planted in sand or soil.
5. Inaccuracies in counting and recording the test results.
6. Seedlings injured or abnormality from some toxicity source. The retest should be made in sand or soil.
7. No two satisfactory tests are within tolerance.

Germination Percentage To Be Reported

- I. The average of the four, three or two 100 seed replications when retest is not required.
- II. When more than one test is made, and they fall within one tolerance range, the average should be reported.
- III. When there are two different official tests and one by an alternate method, the average should be reported.
- IV. When two different official methods or an alternate method is used and the difference exceeds the maximum tolerance range, the higher results shall be reported.
- V. When retests are required and are satisfactory but out of tolerance with the original test, the higher percentage shall be reported.