

# Magruder Reports Quick Reference

For more detailed explanations, go to [www.magruderchecksamples.org](http://www.magruderchecksamples.org)

[magruderchecksamples.fass.org](http://magruderchecksamples.fass.org)

Menu and information to access

**Reports**  
 Analyte All Tests Report  
 Method All Tests Report  
 Analyte Statistical Summary  
 Individual Method Performance Summary

**Report Cards**  
 Method Report Cards  
 Analyte Report Cards



Menu selection	Information
<a href="#">Analyte All Tests Report</a>	Review your result compared with all other results for the <a href="#">analyte</a> regardless of method
<a href="#">Method All Tests Report</a>	Review your result compared with all other results for the method used to determine the <a href="#">analyte</a>
<a href="#">Analyte Statistical Summary</a>	Statistical summary of all results for the <a href="#">analytes</a>
<a href="#">Individual Method Performance Summary</a>	Statistical summary of all results for specific methods. Used to compare and evaluate methods.
<a href="#">Method Report Cards</a>	A report on your lab's proficiency in testing the <a href="#">analytes</a> with respect to specific methods.
<a href="#">Analyte Report Cards</a>	A report on your lab's proficiency in testing the <a href="#">analytes</a> .

Magruder Z Score
3.15
-0.34
0.61
-0.02
0.53
0.58
2.09

**Z scores:** evaluation of your lab result with respect to other lab results.  
**Green** is compliant (> -2 and < 2 standard deviations).  
**Orange** is cautionary (> -3 and < -2 OR > 2 and < 3 standard deviations)  
**Red** is warning (< -3 OR > 3 standard deviations)  
**Grey** is not actionable (insufficient number of labs )

## Analyte & Method Z Scores

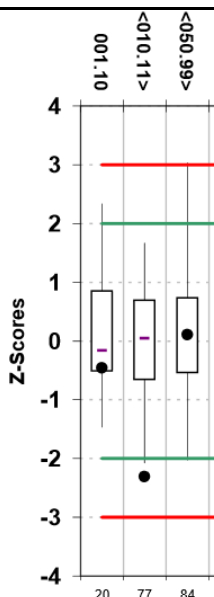
Z score on analyte report card compares your lab result to all results for the analyte regardless of method used. Z score on method report card compares your lab result to other results for the method used.

The analyte Z score measures the lab's proficiency in testing the analyte. One possible reason for a low Z score on an analyte report card may be use of a method that produces a biased result.

In the example below, Z scores for Avail. P<sub>2</sub>O<sub>5</sub> indicates the method resulted in a negative bias with a low cautionary Z score for the analyte but a compliant Z score for the method.

Analyte Report card	Method Report card
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	Magruder Z Score	Magruder Z Score
NH <sub>4</sub> -N	1.12	0.84
Total N	-0.48	-0.67
Total P <sub>2</sub> O <sub>5</sub>	-0.60	-0.17
Avail. P <sub>2</sub> O <sub>5</sub>	-2.78	-1.05



**Analyte report card** has graphical display of your Z score (black dot) compared to other Z scores for the analyte.  
 Box and vertical lines represent the population of Z scores from other labs.  
 Box: 50% of population  
 Lines: 90% of population

**Black dot** between **green** lines is compliant  
**Black dot** between **green** and **red** lines is cautionary  
**Black dot** beyond **red** lines is warning

# Magruder Reports Quick Reference (cont.)

## Other measurement indicators on lab values

### Investigational Allowance

Values for guaranteed analytes have square brackets if they are less than the consensus value for the analyte minus the American Association of Plant Food Control Officials (AAPFCO) investigational allowance.

Magruder Z score for acid soluble Zn in the Analyte Report Card below indicates that the lab result is okay WITH RESPECT to all other lab values. However, square brackets around the lab value indicates the value was less than the guarantee minus the investigational allowance.

Your lab result may be okay with respect to all other lab values (Z score > -2 AND < 2) but improvement should still be sought since the value could initiate an unwarranted investigation.

Proficiency Testing For 1 Analyte								Issue Date : 03/31/2	
Analyte Group	Analyte Group (Units)	Lab 0512 Data		Analyte Values				Magruder	Lab 0512
		Value	range	Rob Mean	Rob SD	R-bar	# Labs	Z Score	Method
321	Acid Soluble Zinc (36%)	[33.55]	0.5000	36.91	1.823	0.5814	52	-1.84	321.99

### Threshold % RSD

The Method Report Card presents Threshold % RSD for your lab value. This is a measure of the proximity of the lab value to the robust mean independent of the variance of all other lab values.

Magruder Z score for total N by combustion in the Method Report Card below indicates that the lab result is cautionary (Z score is < -2). However, the threshold %RSD is very low. If an interlaboratory %RSD accepted for the method were 3%, your value would be compliant.

Proficiency For 1 Method								Issue Date : 05/31/2	
Method Code	Analyte Name and Method (Units)	Lab 0472 Data		Method Values				Magruder	Threshold
		Value	range	Rob Mean	Rob SD	R-bar	# Tests	Z Score	%RSD
010.60	Total Nitrogen, Combustion (32%)	31.30	0.0450	32.20	0.4102	0.3036	52	-2.21	1%

### Precision

Precision of your reported lab values is recorded as the range which is the difference between the duplicate values. Your range can be compared to the average of ranges from all other labs (R-bar) to evaluate how your precision compared to other labs.

Proficiency Testing For 1 Analyte								Issue Date : 10/31/2	
Analyte Group	Analyte Group (Units)	Lab 0493 Data		Analyte Values				Magruder	Lab 0493
		Value	range	Rob Mean	Rob SD	R-bar	# Tests	Z Score	Method
041	Direct Available Phosphorus as P2O5 (4%)	4.625	0.0500	4.743	0.1664	0.0772	38	-0.71	041.10