

## Updated Lime Requirement Recommendations for Oregon (1/20/2022)

The Oregon State University Soil Fertility Program has completed a formal evaluation of the Sikora buffer to replace the SMP buffer for estimating lime requirement in Oregon. Twenty-four acidic soils from Oregon were tested for actual lime requirement using a lab incubation of lime and soils. The actual amount of lime needed to reach pH targets of 5.6, 6.0, and 6.4 was highly correlated to the SMP buffer ( $r^2 = 0.91-0.93$ ) and the Sikora buffer pH ( $r^2 = 0.91-0.93$ ). These correlations are the basis for new updated lime recommendations for both Sikora and SMP buffer pH methods (Table 1) and will be used to update OSU extension guides containing lime recommendations. The new SMP recommendations are included for the time being for the remaining labs still using the SMP method, but may be phased out over time as more labs switch to Sikora. We thank the Oregon Tall Fescue Commission for providing the necessary support to complete this project.

**Table 1. Updated OSU lime recommendations for Oregon<sup>a</sup>.**

Lime requirement test value	New Sikora Recommendations			New SMP Recommendations		
	Target soil pH			Target soil pH		
	pH 5.6	pH 6.0	pH 6.4	pH 5.6	pH 6.0	pH 6.4
	<b>Recommended lime application to attain target soil pH<sup>b</sup> (t/a)</b>					
6.7	0	0	0	0	0	0
6.6	0	0	0	0	0	0
6.5	0	0	0.5	0	0.5	0.5
6.4	0.5	0.5	1.0	0.5	1.0	1.2
6.3	0.8	1.0	1.7	0.9	1.5	1.9
6.2	1.2	1.6	2.3	1.3	2.1	2.6
6.1	1.6	2.1	3.0	1.7	2.6	3.3
6.0	1.9	2.6	3.7	2.1	3.1	4.0
5.9	2.3	3.1	4.3	2.4	3.7	4.7
5.8	2.6	3.6	5.0	2.8	4.2	5.3
5.7	3.0	4.1	5.7	3.2	4.7	6.0
5.6	3.4	4.7	6.3	3.6	5.2	6.7
5.5	3.7	5.2	7.0	3.9	5.8	7.4
5.4	4.1	5.7	7.6	4.3	6.3	8.1
5.3	4.5	6.2	8.3	4.7	6.8	8.8
5.2	4.8	6.7	9.0	5.1	7.4	9.5
5.1	5.2	7.2	9.6	5.5	7.9	10.2
5.0	5.6	7.8	10.3	5.8	8.4	10.8
4.9	5.9	8.3	11.0	6.2	9.0	11.5
4.8	6.3	8.8	11.6	6.6	9.5	12.2

<sup>a</sup>Minor method modifications have been shown to alter lime recommendations by 0.4-0.7 t/a. Soil standards from NAFT or other soil standardization programs can be submitted along with your soil sample to determine if a lab modification correction factor is needed.

<sup>b</sup>Recommended lime application rates are based on an application of 100-score lime and 6-inch soil sampling depth. For example, if your Sikora lime requirement test value is 6.0 and you want to raise your soil pH to 5.6, apply 1.9 t/a of lime.

**Table 2. OSU lime recommendations for pH targets of 6.8 and 7.2 for Oregon soils with less than 42% clay and 7% soil organic matter.<sup>a</sup>**

Buffer pH value	Sikora		SMP	
	Target soil pH		Target soil pH	
	pH 6.8	pH 7.2	pH 6.8	pH 7.2
	Recommended lime application to attain target soil pH <sup>b</sup> (t/a)			
7.0	0	0	0	0
6.9	0.4	0.6	0.4	0.7
6.8	0.8	1.2	0.9	1.3
6.7	1.3	1.8	1.4	1.9
6.6	1.8	2.4	1.9	2.6
6.5	2.2	3.0	2.4	3.2
6.4	2.7	3.6	2.9	3.8
6.3	3.2	4.2	3.4	4.5
6.2	3.7	4.8	3.9	5.1
6.1	4.1	5.4	4.4	5.7
6.0	4.6	6.1	4.9	6.4
5.9	5.1	6.7	5.3	7.0
5.8	5.6	7.3	5.8	7.6
5.7	6.0	7.9	6.3	8.3
5.6	6.5	8.5	6.8	8.9
5.5	7.0	9.1	7.3	9.5
5.4	7.4	9.7	7.8	10.2
5.3	7.9	10.3	8.3	10.8
5.2	8.4	10.9	8.8	11.4
5.1				
5.0				
4.9				
4.8				

<sup>a</sup> These lime recommendations are not appropriate for Willamette Valley soil series Awbrig, Bashaw, Bellpine, Jory, and Nekia, along with other Oregon soil series with similar or greater clay and soil organic matter concentrations. These soils have exceptionally high buffering capacities, and the target pH values of 6.8 and 7.2 may not be achievable through lime application regardless of the rate.

<sup>b</sup> Recommended lime application rates are based on an application of 100-score lime and 6-inch soil sampling depth.

**Table 3. Updated OSU lime recommendations for Oregon for quarter strength lime requirement tests, commonly used for the poorly buffered soils of Eastern Oregon.**

Quarter Strength Lime requirement test value	Quarter Strength Sikora Target soil pH			Quarter Strength SMP Target soil pH		
	pH 5.6	pH 6.0	pH 6.4	pH 5.6	pH 6.0	pH 6.4
	<b>Recommended lime application to attain target soil pH<sup>a</sup> (t/a)</b>					
6.6+	0.0	0.0	0.0	0.0	0.0	0.0
6.4	0.1	0.1	0.3	0.1	0.3	0.3
6.2	0.3	0.4	0.6	0.3	0.5	0.7
6.0	0.5	0.7	0.9	0.5	0.8	1.0
5.8	0.7	0.9	1.3	0.7	1.1	1.3
5.6	0.9	1.2	1.6	0.9	1.3	1.7
5.4	1.0	1.4	1.9	1.1	1.6	2.0
5.2	1.2	1.7	2.3	1.3	1.9	2.4
5.0	1.4	2.0	2.6	1.5	2.1	2.7
4.8	1.6	2.2	2.9	1.7	2.4	3.1

<sup>a</sup> Recommended lime application rates are based on an application of 100-score lime and 6-inch soil sampling depth.