

# Silage Leachate Sample Calculations For Bunker Silos

Sue Reamer, NRCS Engineer  
9/6/2002

Location/animal type/number/size or waste generation type	Production and characteristics	Estimated annual production calculations
<p>Bunker Silos</p> <p><b>Step 1.</b> Inside Bunker Dimensions 40 ft wide x 120 ft long x 12 ft high</p> <p>Bunk Volume = <u>57,600 ft<sup>3</sup></u></p>	<p>Example of Silage amounts 1,000 Tons Corn Silage <u>300 Tons Haylage</u> 1,300 Total Tons</p> <p><b>Step 2.</b> Silage tonnage; use a density of 45 lbs/ft<sup>3</sup>, this is based on fair to good compaction of the horizontal silo.</p> <p>57,600 ft<sup>3</sup> x 45 lbs/ft<sup>3</sup> x tons/2000 lbs = <u>1,296 tons</u></p>	<p><u>Leachate Volume:</u></p> <p><b>Step 3.</b> Use 1 cu ft leachate/ton of silage or 7.48 gallons/ton of silage as per – NRCS- <i>Agricultural Waste Management Field Handbook, Part 651 Chpt. 4, g.4-23</i></p> <p>Silage Leachate Calculation; 1,296 tons x 7.48 gals/ton = <u>9,694 gallons</u></p> <p><b>Step 4.</b> <u>Runoff Volume:</u></p> <p>Initial Runoff Collection; 40 ft x 120 ft = 4,800 sq.ft. x 0.5 inches/12 in/ft = 200 ft<sup>3</sup></p> <p>200 ft<sup>3</sup> x 7.48 gals/ ft<sup>3</sup> = <u>1,496 gals</u></p> <p><b>Step 5.</b> Recommend Silage Leachate and Runoff Collection of; 9,694 gals + 1,496 gals = <u>11,190 gallons</u></p>
<p>Spoiled Feed</p>	<p>Spoil Feed 20 Tons</p>	<p>Silage tonnage; use a density of 45 lbs/ft<sup>3</sup>, this is based on fair to good compaction of the horizontal silo.</p> <p>Volume: 20 tons x 2000 lbs/ton x 1 cu ft / 45 lbs = <u>888 cu ft/yr.</u></p>