STACK-TRENCH SILOS

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Stack-Trench Silo

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Stack-trench silos have been used by Washington farmers for many years. These silos have saved thousands of tons of valuable cattle feed. Now that more feed is needed, many farmers can increase their stored feed by using a silo. Materials for upright silos are scarce, so the stack-trench can be used to good advantage although spoilage in the stack-trench may be greater than in an upright silo. The value of silage as a winter feed has been discussed in Extension Circular 57 "Grass Silage."

The stack-trench silo varies from the upright silo only in its position, being horizontal instead of vertical. Construction cost of these silos is low. The low cost of construction makes this type silo practical for anyone with eight or more cows.

Location

The silo should be located as near the place where silage is to be fed as possible. Drainage must be such that water will not come onto the silage. A well drained side hill is particularly well adapted for a trench.

Construction

If possible, visit a properly built stack-trench silo before starting work. Your county agent can show you such places.

1. Decide how much of the silo will be built below the ground. Drainage and water level in the ground when the silage is in the silo will be the determining factor. Where sub-surface drainage is poor, the stack must be entirely above ground.

2. Lay off the area for the size desired, use a plow to loosen dirt and a scraper to remove it.

3. Slope side of trench inward about 8 inches for each 3 feet of depth to prevent dirt from caving in. Sides should be smoothed with a spade.

4. Locate excavated dirt so it will be available to cover silo.

5. Silage will spoil unless air is kept out. Sandy or gravelly soils will not exclude air in the trench portion and will cause spoilage along the outside. In such soils it is desirable to concrete or board up the sides of the trench. (For complete information on constructing these silos get U.S.D.A.

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The boards may be covered with strong waterproof paper.

![Silo Diagram](image)

Fig. 2. Stack-trench half below ground.

6. The silage should be well packed with a horse or tractor.

7. To exclude air, any portion of the stacked material above ground must be completely covered with wet soil or enclosed in a boxed-in structure. In every case the top of the silage should be weighted down with at least one foot of moist soil. This dirt should be wet down occasionally.

8. A ditch to carry away surface water should be dug around the side and a tile for drainage provided at the lowest point in the trench to remove excess water.

![Silo Diagram](image)

Fig. 3. Stack completely above ground.

**Size**

The correct size of the stack-trench silo depends both on the quantity of silage needed, and somewhat on the amount to be fed daily. When silage is needed for large herds, several silos are advised as this allows different crops to be ensiled or fed at different times. Stacks built entirely above the ground must be wide enough to prevent tipping. Small silos have greater percentage of loss than larger sizes. The following table will serve as a guide to proper size:

<table>
<thead>
<tr>
<th>Number of Cows</th>
<th>Tons of silage needed</th>
<th>Cubic feet of settled silage</th>
<th>No. of silos</th>
<th>Size of stack-trench to build</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Width</td>
</tr>
<tr>
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<td>15</td>
<td>750</td>
<td>1</td>
<td>9</td>
</tr>
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<td>30</td>
<td>1500</td>
<td>1</td>
<td>10</td>
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<td>60</td>
<td>3000</td>
<td>1</td>
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<tr>
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<td>150</td>
<td>7500</td>
<td>2</td>
<td>16</td>
</tr>
</tbody>
</table>

Stacks when settled will be $\frac{1}{2}$ to $\frac{3}{4}$ original height.

Depth of trench will depend upon drainage conditions.
Fig. 4. (a) Packing trench silage. (b) Feeding out of silo “a”. (c) Slack-trench silo used for small herd. (d) Slack-trench silo used to store surplus pasture grass. Stack in background is hay.

Removing Silage

The silage should be fed out in sections beginning at one end. The width of the section uncovered will depend on the amount of silage to be fed. It is advisable to feed a section out in five or six days.

Common Causes of Poor Silage

Moldy: Air getting into the silage because of insufficient packing or porous side walls causes molding. Coarse, stemmy material and uncut forage requires more packing.

Dark brown or burnt: Indicates that the material put up was too dry, too mature when cut, too coarse or improperly packed.

Soggy, rotten: Too much moisture and poor drainage causes this trouble.

Strong, disagreeable odor: Too much moisture and not enough acid formed in the silo causes such disagreeable odors. This is caused by the crop being too wet when ensiled.