

Determining Your Current Forage Inventory

One component of determining how much forage may need to be purchased is determining the current quantities of forage available on the farm. The attached Forage Inventory worksheet should assist in doing this. The following points should be helpful in filling out the inventory form.

1. Capacity of upright silos – Table 1.
2. Quantity of feed remaining in an upright silo – This needs to be calculated using the information in Figure 1. The calculations are slightly different for top and bottom unloading silos due to differences in packing density associated with the height of the silage in the silo. These calculations are different due to:
 - a. The density of the silage increases as you go from top to bottom in an upright silo.
 - b. In a top unloading silo, the silage already fed has a lower density than the silage remaining.
 - c. In a bottom unloading silo, the silage already fed has a higher density than the silage remaining.
3. Example calculations are:
 - a. Top unloading silo –
 - i. 20' by 60' silo – Capacity = 159 tons dry matter (Table 1)
 - ii. The silo currently has 38' of silage remaining
 - iii. 22 feet of silage has been fed
 - iv. Capacity of a 20' by 22' silo = 38 tons of dry matter (Table 1)
 - v. Tons of silage dry matter remaining = $159 - 38 = 121$
 - b. Bottom unloading silo –
 - i. 20' by 60' silo – Capacity = 159 tons dry matter (Table 1)
 - ii. The silo has 38' of silage remaining
 - iii. 22 feet of silage has been fed
 - iv. Tons of dry matter in a 20' by 38' silo = 82 tons (Table 1)
 - v. This is the tons remaining to be fed
4. Bunker silos –
 - a. The quantity of silage in a bunker silo varies with the packing density (lbs. of silage dry matter per cubic foot).
 - b. An estimate of packing density is needed to do the calculations for bunker silo capacity in the attached worksheet. The following general inputs can be used:
 - i. Low packing density = 12 lbs. DM/cubic foot.
 - ii. Average packing density = 15 lbs. DM/cubic foot.

- iii. High packing density = 18 lbs. DM/cubic foot.
- c. Example bunker silo calculation:
 - i. Silage remaining = 12' high by 40' width by 100' length.
 - ii. Cubic feet remaining are $12 \times 40 \times 100 = 48,000$.
 - iii. Tons of silage remaining with an average packing density (15 lbs. DM/cubic foot) = $48,000 \times 15 = 720,000$ lbs. DM (Tons = $720,000 / 2,000 = 360$ tons DM).
 - iv. If the silage is 35% DM, then there is 1,028 tons of wet silage in the silo ($360 / 0.35$).

Table 1. Approximate Dry Matter Capacities of Tower Silos (Tons)^a
Silo Diameter, (feet)

Silo Height, feet	12	16	20	24	28
20	12	21	33	47	65
24	15	27	43	61	83
28	19	35	53	76	104
32	23	41	65	93	127
36	28	48	76	109	150
40	32	57	89	127	173
44	37	65	102	147	200
48	42	74	115	166	226
52		83	129	186	254
56		93	144	207	282
60		102	159	228	309
64			174	250	340
68			190	272	370
72				293	400
76				314	427
80				334	455

^A Source: Silage and Hay Preservation – NRAES-5 - 1990

Figure 1 Top Unloading Silo*

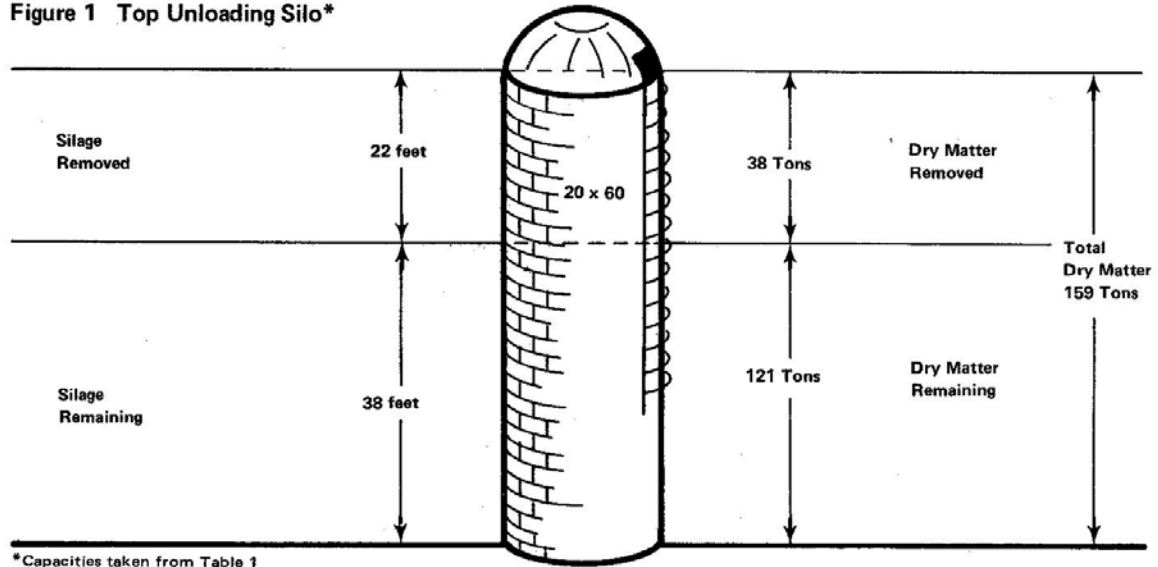
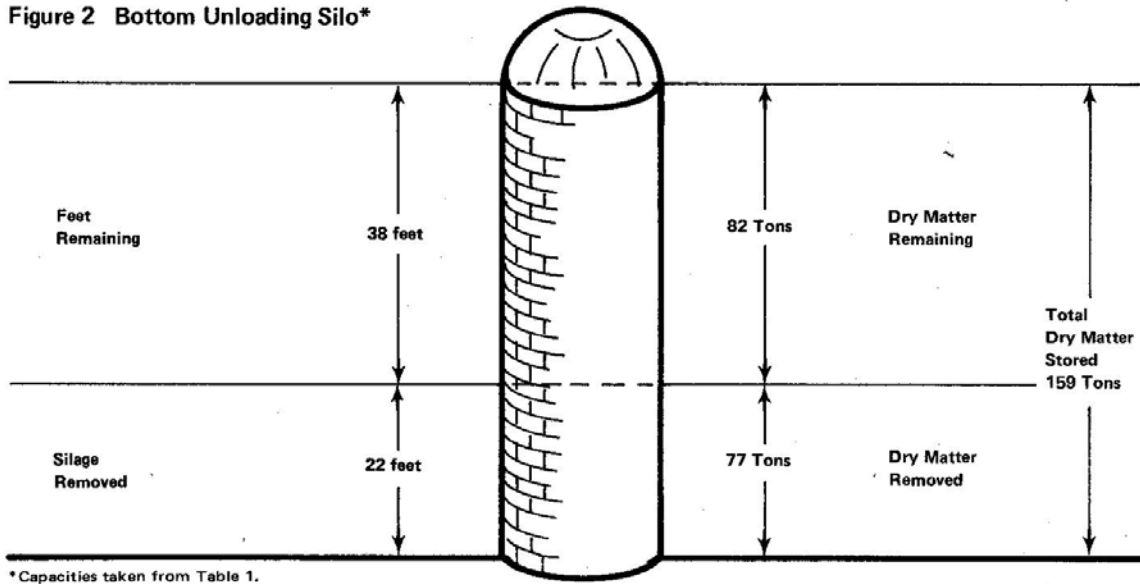


Figure 2 Bottom Unloading Silo*



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Source: Managing Feed Inventory, Bulletin A2945, University of Wisconsin, 1978

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