

Master Forage Probe

Measuring silage density is a critical part of monitoring forage quality. One of the best tools for doing this is the master forage probe. The Master Forage Probe from Dairy One can help you gather valuable information needed to evaluate and improve silage management. Available exclusively from the Dairy One Forage Lab, the probe is designed to measure silage density, as well as obtain representative core samples from the face of bunk silos, bagged silage, and large round and square baled hay.



Corn and hay crop silages are valuable commodities on dairy farms. A good fermentation relies on proper packing to exclude oxygen. Inadequate packing in bunk silos, trenches, piles and ag bags can lead to nutrient loss and spoilage, thereby lowering feeding value and potential milk production.

SAMPLING GUIDELINES FOR BUNK SILOS

Safety comes first! Evaluate the silage face for any risk factors and avoid any unsafe areas/situations. **Remember**, bunk faces may be unstable - use a buddy system while sampling. Be sure of your footing. Never take samples from an unstable position. Wear leather gloves to protect your hands when pushing samples out of the probe cylinder or sharpening the cutting edge.

Like anything else, the results are only as good as the sample! Sample as many locations across the face of a bunker silo as possible. More reliable forage analysis results are obtained by compositing several sub-samples instead of relying on one sample; however, be sure to record the location, weight, and depth of each sample if you plan to evaluate packing density, since it will vary from side to center and from the top to the center and bottom of the bunk silo.

Sample to a depth of 6-12 inches. Do not "re-sample" a hole in an attempt to reach a greater depth for density measurements. A sharp tip, a clean probe and a well-charged battery will result in the easiest sample collection. Spraying the outside of the probe with silicone spray or Pam Cooking Spray may improve ease of use and will not affect the forage analysis, since the spray remains on the outside of the probe. Start in the center of the bunk face and collect probe samples from 3 feet below the top (1), from the center (2), and from 3 feet above the bottom of the bunk silo (3). Repeat this process, top, center and bottom midway between the silo center and the side walls on each side.



Suggested sampling pattern across face of bunk silo.

If time or battery power is limiting, probe at the center of the face (2) or about one half the depth, to avoid low density material at the top and dens-

er silage at the bottom of the bunker.

Use common sense and take the proper safety precautions especially when sampling from heights requiring a ladder. Never sample from an unstable position.

Remove probe from the driver and insert the plunger into the cutting end of the probe to push the forage out of the other end. Extra effort may be required if the probe is dirty or the silage is unusually dense. Placing your hands around the probe and pulling it over the wooden plunger to empty it into a bag or bucket may work best in some situations. Leather gloves are recommended to protect your hands.

MAINTENANCE OF THE PROBE

Keep the probe as clean and smooth as possible. 400 or 600 grit emery cloth may help remove scratches or burrs that may develop over time and with use. It is also helpful in the bunk silo if you cannot wash gummy residue off the probe.

At the end of the day, wash the driver and inside of the probe with warm soapy water to remove gummy build-up that may create resistance when drilling or unloading. Wash the probe and driver in dishwasher after each day's use if possible.

Carry the forage probe in the horizontal position to avoid damage to the cutting edge should the probe be dropped. The cutting edge can be refurbished if it is damaged or becomes difficult to sharpen after repeated use and sharpening in the field.

To have your probe refurbished, return the probe to Dairy One, 730 Warren Road, Ithaca NY 14850 with a check for \$30 or account number for billing purposes.

Table 1 shows recommended values for silage density based on work by Holmes and Muck in 1998.

	Density - pounds per cubic foot	
	As Fed	DM
Bunk Silo		
Hay Crop Silage	35-43	14-15
Corn Silage	40-50	14-15

Table 2 shows a summary of core samples collected from 168 bunker silos in Wisconsin in 1999. Average values fell within the desired range; however, many samples were substantially above or below desired range.

	Hay Crop Silage (n=87)			Corn Silage (n=81)		
	Ave.	Range	Std Dev	Ave.	Range	Std Dev
% DM	42.0	24-67	9.5	34.0	25-46	4.8
Wet Density (lb/ft ³)	37.0	13-61	10.9	43.0	23-60	8.3
DM Density (lb/ft ³)	14.8	6.6-27.1	3.8	14.5	7.8-23.6	2.9
Ave. Particle Size (in)	0.46	0.27-1.23	0.15	0.43	0.28-0.68	0.08

Master forage probes and replacement parts can be ordered from:

Dairy One Forage Lab
730 Warren Road
Ithaca, NY 14850
Phone: 1-800-344-2697 x2172
www.dairyone.com