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A CORE SAMPLER FOR SILAGE

By A. L. HAMILTON, Senior Dairy Instructor

FOR five years now the Dairy Division of the Department of Agriculture has con­ducted a silage competition on behalf of the Australian Dairy Produce Board Pasture Improvement Committee. The competition is for farmers in the South­West dairying districts and has attracted an increasing number of entries each year.

One requirement in judging the silage depends on the analysis of protein and moisture in a representative sample from each entry.

Taking the samples presents several problems as they have to be taken at three positions from top to bottom of the cut face of the silage after about half the stack has been used. Because of the differ­ences in the time of feeding out this means long delays in getting the samples and extends the judging period.

Also, because of the tendency to fill pits or build stacks in layers, sampling is often not accurate enough. On a deep face one or more of the layers, which could be quite different in botanical composition, could be completely missed.

To overcome this and get accurate and fast sampling, a method of taking a con­tinuous core through the full depth of the silage before feeding out was needed.

Several methods were tried and a satis­factory, easy to make sampler was devised.

The original apparatus consisted of a 1/16 in. gauge, 2 in. diameter stainless steel tube 3 ft. long. The tube was drilled at one end to take a 2 ft. length of ½ in. galvanised water pipe as a handle, and sharpened on an emery wheel to a scalloped cutting edge at the other end. The bevel forming the cutting edge was ground from the outside of the tube so that the core of silage was not compressed after cutting and could be removed easily using a plunger.

A length of broom handle with a flat circular plate screwed onto the end was used as a plunger. The plate was made of a round washer ¼ in. thick which fitted neatly into the stainless steel tube. The broom handle was about one foot longer than the sampling tube.

A stainless steel sampling tube is used because it does not tarnish and keeps a good cutting edge with an occasional touch up with a fine file.
Using the Sampler

Material covering the top of the stack is removed and the sampler stood with the cutting edge on the surface of the stack. With downward pressure and rotation of the handle through 180° the tube will cut into the silage. The wavy cutting edge is able to cut in either direction according to the rotation of the handle.

It is not advisable to cut any deeper than one foot before removing the cutter and emptying it; especially if the silage is dense. Any deeper than this could result in the core becoming compacted and hard to remove. If too much force is needed to get the core out, moisture could be lost as it is squeezed out by the pressure used to remove the core.

The cutting operation is repeated several times until the cutter breaks through into the soil below.

The three feet length of tube shown in the picture seems to be the most convenient length but it limits core sampling to a little under three feet. A longer length of pipe makes it awkward to keep up the pressure on the pipe when starting the cut and rotating the handle.

A method of extending the depth is shown in the diagram. An extension tube is fitted with a collar or sleeve which is drilled to take a short pin cut from \( \frac{1}{4} \) in. water pipe. The holes in the sleeve are drilled to coincide with the holes for the handle which are drilled in the sampling tube.

The other end of the extension tube is drilled to take the handle. To remove the core, the sampling tube is disconnected from the extension so the plunger can be used.

The core sample provides a good means of visual examination of the silage at any level in the stack and would be handy for field extension work and general appraisal of silage.

The sampler has been used for sampling bales of meadow hay and could also be used for examining well stacked loose hay if the cutting edges were kept in good condition.

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