Leaves Your Soil Tins at Home

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Highlight: Inexpensive plastic Ziploc bags were used to transport gravimetric soil moisture samples from the field to the oven. The bags retained moisture as well as soil tins and provided a reduction in container bulk and weight.

The efficiency of obtaining gravimetric soil moisture samples is often hindered by bulky soil tins. As a possible solution to this problem, we examined the use of plastic Ziploc bags to transport samples from the field to the oven, where soil tins were used for drying. The ability of these bags to retain moisture was tested by performing the following experiment.

Soil from two sites was used in this study, a loamy sand with a 5% soil moisture content and a loam with a 25% soil moisture content. Three types of containers were used to transport samples from the field: (1) Ziploc bags placed in an additional plastic bag, (2) soil tins, and (3) plastic Ziploc bags (Fig. 1). Nine samples were placed into each container type at each site. The Ziploc bags were rolled from the bottom, forcing the air out, and sealed with the minigrip closure. One-third of the samples for each container type was placed in an oven at 105°C after 24, 72, and 120 hours after collection. This was done to examine the reliability of each container type for holding moisture over a 5-day time span. Samples remaining after each time interval were stored at room temperature on a table top. Soil in Ziploc bags was transferred into soil tins prior to being oven dried for 48 hours. Time expended in transferring these samples from bags to tins was minimal, 30 to 35 minutes per 100 samples.

Percentage soil moisture was calculated from the weight of water removed by oven drying divided by the weight of the oven-dried soil. A factorial analysis of variance of these data indicated that there were no significant differences (p < 0.01) among the containers for maintaining the original soil moisture. Plastic Ziploc bags were as effective as soil tins throughout the five-day storage period. Placing Ziploc bags into additional plastic bags did not significantly modify their reliability, though this practice may be warranted when transporting samples collected at sites distant from roads. The initial soil moisture percentage (5% vs 25%) did not significantly influence the performance of Ziploc bags as compared with soil tins.

One of the authors has used Ziploc bags to transport soil samples from alpine study sites with percent soil moisture as high as 50%. No detectable difference between soil tin and Ziploc samples were observed after a 40-day period.

Our use of Ziploc bags for transporting soil samples has allowed us to collect more samples in less time because of reduced bulk and weight. Based upon container dimensions, empty Ziploc bags provide a 98% reduction in space over empty soil tins. As much as an additional 20% of the soil tin volume is also lost in space between the rigid, round tins. Volume reductions of Ziploc bags are inversely proportional to the volume of the contained soil sample. When working at sites distant from roads, perhaps the most important advantage of Ziploc bags is that of lighter weight since their weight is only about 5% of that of soil tins.

Sampling time saved by using Ziploc bags should more than offset their small expense, approximately $0.60 per package of 50. Finally, the reliability of Ziploc bags for storing samples will also allow drying to be done with one-third the tins normally required, by drying samples in three shifts over a 5-day period.

Pine Needle Water Extracts as Potential Abortive Agents in Gestating Cow Diets

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Highlight: A number of bovine abortions were reported during warm spells of the winter of 1974 in the southern interior of British Columbia. Observers speculated that the frequent thawing periods produced a run-off which extracted and accumulated abortive agents from the pine needle litter. In a test of this hypothesis, five pregnant cows each consumed extract from 200 to 300 kg ponderosa pine needles during their last trimester. No pre-partum effects were observed and five normal calves were delivered.

Abortions in cattle induced by yellow pine (Pinus ponderosa) needles have been reported by numerous investigators in western Canada and the United States (MacDonald 1952; Stevenson et al. 1972; Kamstra 1975). Veterinarians and ranchers in the southern interior of British Columbia reported a rash of bovine abortions during the warm spells of the winter of 1974. However, the incidents occurred in ponderosa pine stands devoid of slash or fresh windfall foliage. Observers speculated that the frequent thawing periods produced a run-off which extracted and accumulated abortive agents from the pine needle litter. It appeared that abortions occurred when...