

Quick and Easy Methods for Collecting Coprophilous Fungi

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Introduction

Collecting dung as a source of fungi is not a task that invites enthusiasm. If given the choice, I don't think any one would pick collecting dung as a pastime. However, there are many very interesting fungi that grow upon and cause the decomposition of dung. These fungi can be used as research tools (6) and as models for classroom use (1, 2, 5). Quick and easy methods for collecting fungi growing on dung can make the task, while not totally inviting, at least, less of a chore.

Methods and Materials

The two different procedures described in this paper can be used to simplify the collection of coprophilous fungi. Using the first technique, collecting dung can be made relatively quick and easy, with very little fuss or mess. Using the second technique, one can provide an environment in which freshly collected organisms can be maintained for four to six weeks without losing viability.

Collection of Samples

Plastic baggies can be used to collect samples of dung. While plastic baggies are not sterile, they are aseptic and can be used to collect dung without fear of contamination. Coprophilous fungi have a selective advantage on dung and most common contaminants can not compete effectively with them (1).

The inexpensive baggies with twist ties are the best to use. They are flexible and easy to turn inside out. The "zip-locked" baggies are rigid around the top and can not be inverted easily, and therefore are cumbersome and inconvenient. When preparing to make a collection, the collector's hand is inserted into the open end of the baggy, much the same way a hand is inserted into a rubber glove. While wearing a baggy as a glove, it is easy to reach out and select samples of material to be collected. With the collection held in this manner one can use the other hand to pull the baggy over the collecting hand. This will turn the baggy inside out and enclose the sample. The baggy can now be closed tightly and fastened with a wire twist tie.

Dropping a small paper tag with a collection number into the baggy before closing it, or writing on the exterior of the bag with a waterproof marker makes record keeping simple and reduces the chance of misidentifying the collection. Specimens collected this way can be kept in baggies for several hours before transferring them to other, more suitable containers. While on a foray, it is possible to collect coprophilous fungi with no more equipment than a few baggies and a small notebook. It is not necessary to be weighted down with rubber gloves, whirl packs, and other cumbersome materials. Baggies are readily available, inexpensive, disposable, light weight, neat and clean.

Maintenance of Samples

When samples of dung containing coprophilous fungi have to be kept for more than a few hours they must be transferred to containers that will provide adequate aeration. A simple culture container can be made from everyday plastic drinking cups. This simple culture container can be constructed of two different sized transparent,

plastic drinking cups with the same diameter, such as a Solo P-16, 16 oz cup, and a Solo TP-9, 9 oz cup, two sheets of filter paper, and a piece of masking tape.

Filter paper is placed in the bottom of the larger (16 oz) drinking cup and moistened with water. A relatively small sample of dung (approximately 50 cc) is placed on the filter paper in the bottom of the cup. Then, the smaller cup is placed lip to lip on top of the larger one and the cups are fastened together with masking tape.

This simple, homemade culture container is aseptic, easy to assemble, and can be constructed from materials available in almost any discount, grocery, or drug store.

Results

We have used plastic baggies to collect dung samples for research for a number of years in Ohio (3) and Indiana (4). In all of the scores of collections we have made, there have been no instances of contamination attributable to the plastic baggies. The use of baggies to collect dung to examine for coprophilous fungi seems to be much more convenient, yet no more prone to contamination than collecting dung using more sophisticated materials such as sterile rubber gloves, and whirl packs.

The technique of using drinking cups to construct a culture container is a relatively new one. Recently, while collecting coprophilous fungi in Yellowstone National Park, it was necessary to maintain growing cultures for three to four weeks before returning to the laboratory. Of forty-three samples of dung collected and maintained in these simple culture containers 30 isolates of coprophilous fungi developed while there was no detectable bacterial or fungal contamination.

Upon returning to the laboratory, these culture containers were retained, and cultures were maintained in them for yet another two weeks. Even so, there was no greater contamination problem with these simple homemade plastic culture containers than with the glass culture dishes normally used in our laboratory.

Discussion

While neither the baggies nor the drinking cups are sterile, they are aseptic. Both the baggies and the drinking cups are manufactured under sufficiently aseptic conditions to be used to hold food for human consumption. Our experience has shown that contamination of dung samples is not a problem with these materials. Yet, they are very inexpensive and compact, and can be purchased from any of several sources.

Whether collecting coprophilous fungi for research or for teaching, the methods described here are highly recommended. Ease of acquisition, convenience, and low cost of materials coupled with ease of use, compact storage, and utility make the combination of baggies for collecting and plastic cups for culture containers quick and easy methods for collecting coprophilous fungi.

Literature Cited

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