XIV. MANUAL FOR COLLECTING AGARICS (& BOLETI)

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This brief guide has been prepared during a stay in Malaysia as an aid to local collectors and turned out to fulfil a need. A wider public may find it of use as well. The writer gratefully acknowledges improvements by Dr. C. Bas, Leiden. (Ed.)

As agarics and boleti belong to the most common, but also to the most difficult fungi to collect and preserve, this guide is written particularly for this group of macromycetes. Obviously many recommendations and indications will apply to other fungi with fleshy fruit-bodies as well. Macromycetes with non-fleshy fruit-bodies can be treated in the same way, but for identification afterwards extensive descriptive notes are usually not necessary.

We can distinguish several stages in making herbarium collections of agarics.

1. Collecting
2. Describing
3. Identification
4. Drying
5. Mounting

1. COLLECTING

(a) Agarics grow everywhere, in forests, parks, plantations, at roadsides, on lawns, etc. In temperate zones they fruit most abundantly in autumn and, if not too dry, in summer. In tropical areas they fruit perhaps the whole year round, but most abundantly after relatively dry spells when the heavy rains have started again.

(b) Collect many specimens. A collection of only a single one is, generally spoken, too small. The smaller the fruit-bodies are, the more should be collected. As a simple rule, a collection of mushrooms with a cap of 3—10 cm wide should consist of at least 2 specimens; if the cap is smaller, then at least 5 specimens should be collected, and even more when the cap is less than 1 cm across. Only in large species with a cap over 10 cm diam., a single specimen will be sufficient. But still: the more material, the better, also in view of exchange and deposits in different institutes. Try to collect different developmental stages of the fruit-bodies.

(c) Try to be sure that a collection really consists of specimens of one and the same species! If the fruit-bodies stand close together, it will usually be safe to assume that the are conspecific. If they grow at some distance, however, inspect them closely to avoid mixtures.

(d) If an agaric grows on soil, dig it out to collect the foot as well. Some agarics have a bulb or are deeply rooting. This can be an important character. If growing on dead leaves, twigs, or wood or the like, remove most (but not all) of that substrate.

(e) Be careful not to touch the stem too much in handling the fruit-bodies. Some species have cystidia, hairs, flocks, or veilremnants at the stem, which can be damaged easily. The surface structures of the stem usually are important characters.

(f) Soil has to be removed as much as possible from the base of the stem. During transport and drying it will turn into dust and cover the fruit-bodies with a thin layer making later microscopical studies difficult or even impossible.

(g) Agarics are preferably transported in a box of an appropriate size, each species in a separate one, or in a separate compartment. The empty space of the box can be filled with soft leaves or moss. As agarics are generally rather fragile, the specimens, especially the ones laying on the bottom, will be badly damaged if you transport them in a plastic bag. Moreover, in such a bag the material tends to spoil rapidly and different collections and species will get mixed up.

(h) If growing on soil indicate name of nearest tree; if on dead matter indicate from which plant or tree. If you do not know its identity, make a good herbarium collection as complete as possible with leaves, flowers, fruits, field notes of that as well.

2. DESCRIBING

(a) For critical taxonomic work descriptions of fresh material are indispensable. Field notes should record those characters that will disappear with drying, e.g. size, shape, colours, as well as smell and taste. making a spore print (see ALEXOPOULOS, 1962, p. 456) is very important, but it will take some hours or a night to get one. For descriptions a model form is useful (see Appendix). For recording colours a colour code should be used (see Literature). A photograph or habit sketch on natural size or 2—4 times magnification is very useful, too.

(b) Descriptions of microscopical characters can also be made from properly dried specimens later on.

3. IDENTIFICATION

For identification both fresh and dried (if properly annotated) mushrooms can be used. It is often difficult, for you need a stack of (expensive) literature and a microscope. It is important, however, to have at least some keys for the identification of families and genera. A book with many photographs may help in checking identifications (see Literature). When family or genus is known it will be easier to find specialists willing to identify your collections down to the species (they would appreciate to be allowed to keep duplicate material as compensation for their efforts!).

4. DRYING

(a) It is preferable to dry complete fruit-bodies, but large specimens can be sectioned length-wise or the cap can be separated from the stem to fit herbarium envelopes or boxes. Thick-fleshed fungi (most boleti) should always be sectioned length-wise.

(b) Agarics should be dried without pressing at a temperature between 40 and 60° C. Too low a temperature causes rapid decomposition, too high a temperature causes spoilage. Make sure that there is a slow but continuous stream of fresh air from below that, after heating, can leave the top of the dryer easily.

(c) Dry at least for 1 to 2 days. More fleshy specimens may take longer (3 or 4 days). Never interrupt the drying process. Check if the specimens are dry by tapping them gently on a firm surface; this should make a clear sound.

5. MOUNTING

(a) Unlike higher plants dried agarics are usually too fragile to be mounted on a sheet of paper.

Preferably they should be stored in card board boxes of an appropriate size. When boxes are unavailable, another possibility is to put the fungi in small plastic bags (with some tissue paper against condensation), or in thin paper folded into an envelope.

These boxes, bags, or envelopes are to be placed in envelopes of the same type as is usually used for mosses. In the Netherlands envelopes of 3 sizes are used: small (ca. 14 cm long), medium (ca. 20 cm), and large (ca. 25 cm), all 13 cm high.

To avoid pressure on the material these envelopes are place upright in a box that will fit on a shelf, therefore of about the same size as an herbarium sheet. Another possibility is to glue the envelopes to an herbarium sheet.

(b) Dried agarics are hygroscopic: they will attract moisture spontaneously from the air. In temperate areas this is usually no problem, but in the tropics storage in air-conditioned rooms or air-tight tins is strongly recommended.

(c) Dried fungi, especially the more fleshy ones, are sometimes eaten by insects. Check from time to time if there are any infestations. Deep-freezing (ca. -25° C for 3 days) kills all insects and their eggs, larvae, or pupae.

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MODEL FORM FOR DESCRIPTIONS OF AGARICS AND BOLETI

Family . . . . . Det. by . . . . . .
Name. . . . . .
Locality. . . . . .
. .° ..' N, . . ° ..' E Altitude. . . . m Date . . . . . .
Collector(s). . . . . .Number . . . .
Habitat (if growing on soil indicate name of nearest tree; if on dead matter indicate from which plant or tree). . . . . .
. . . . . .
. . . . . .
Cap Size . . . . .mm diam. Shape . . . . . papillate/umbilicate*
Colour. . . . . .shiny/dull* Striated/sulcate/margin splitting/hairy/scaly*
Velum remnants. . . . . Colour. . . . . .
Gills/pores* Number lamellae. . . . . .and lamellulae . . . . . .
Colour. . . . . Width . . . .mm
Free/adnate/decurrent* Thin/thick*. Very close/close/rather distant/distant*
Edge: entire / erose*, colour . . . . . .
Stem Length . . . mm. Diam. at top . . . mm, in middle . . . mm, at base . . .mm
Colour (if different on top and at base describe separately). . . . . .
. . . . . .Glabrous/pruinose/hairy/squamose/striate/sulcate*
Cortina / ring*, colour. . . . . .Volva yes / no*, colour. . . . . .
Flesh (make longitudinal section):
Cap thin / thick*, colour. . . . . Stem thin/thick*,
colour. . . . . .
Smell: indistinct / sweet / nasty*, like. . . . . .
Taste: indistinct / sweet / acrid / bitter / nasty*, like . . . . . .
Spore print colour. . . . . .

Further remarks . . . . . .
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* Delete when not applicable.