Guide to recognizing of the manly spore moulds or airborne conidia

The plate 6-7 showed the different types of airborne conidia

PLATE 6

Spores of Phycomycetes, Ascomycetes, and Fungi Imperfecti.

1 *Entomphthora muscae*, conidium, s
2 *Peronospora parasitica*, sporangium, s
3 *Mucor spinosus*, sporangiospores, c
4 *Absidia corymbifera*, sporangiospores, c
5 *Absidia ramosa*, sporangiospores, c
6 'Hyaline rods', t
7 *Tuberculatia vulgaris* (= conidium of *Nectria cinnabarina*), s
8 *Nectria cinnabarina*, ascospore, s
9 Unknown ascospore, t
10 Unknown ascospore, t
11 *Claviceps purpurea*, ascospore, s
12 *Ophiobolus graminis*, ascospore, s
13 *Helvella crispa*, ascospore, s
14 *Humaria granulata*, ascospore, s
15 *Pyronema confluens*, ascospore, s
16 *Bulgaria inquinans*, ascospore, s
17 *Xylaria polymorpha*, ascospore, s
18 *Hypoxylon coccineum*, ascospore, s
19 *Hypoxylon multiforme*, ascospore, s
20 *Chaetomium indicum*, ascospore, c
21 *Chaetomium globosum*, ascospore, c
22 *Venturia inaequalis*: (a) conidium; (b) ascospore, s
23 *Melanospora zamiae*, ascospore, s
24 *Sordaria fimicola*, ascospore, c
25 *Daldinia concentrica*, ascospore, s
26 *Rosellinia aquila*, ascospore, s
27 *Pleospora herbarum*, ascospore, s
28 *Polythrincium trifolii*, conidia: (a) t, (b) s
29 *Botrytis* sp., conidium, c
30 *Trichothecium roseum*, conidium, c
31 *Erysiphe (graminis?)*, conidium, t
32 *Aspergillus glaucus* (series), conidia, c
33 *Aspergillus fumigatus*, conidia, c
34 *Aspergillus niger*, conidia, c
35 *Aspergillus nidulans*, ascospore, c
36 *Penicillium cyclopium*, conidia, c
37 *Penicillium digitatum*, conidia, c
38 *Penicillium chrysogenum*, conidia, c
39 *Diatrype stigma*, conidia, s
40 *Helicomyces* sp., conidium, t
41 *Papularia arundinis*, conidia: (a) face view, (b) edge view, c
42 *Cryptostroma corticale*, conidium, s
43 *Humicola stellata*, conidium, c
44 *Humicola lanuginosa*, conidium, h
45 *Epicoccum* sp., conidium, t

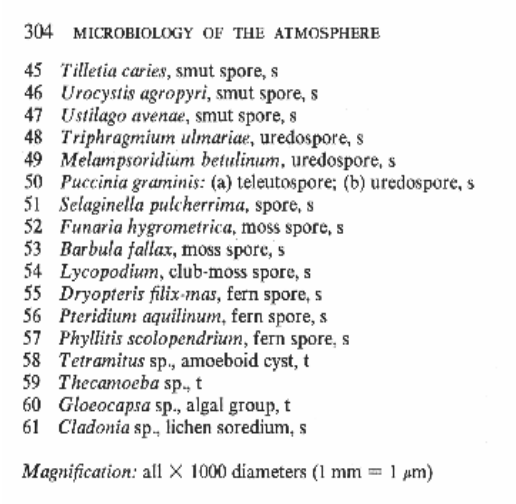
46 *Stemphylium* sp., conidium, t
47 *Asterosporium* sp., conidium, t
48 *Alternaria* sp., conidia, t
49 *Pithomyces chartarum*, conidia: (a) rounded, (b) collapsed, t
50 *Bispora monilioides*, conidium, s
51 *Helminthosporium* sp., conidium, t
52 *Torula herbarum*, conidium, t
53 *Cladosporium* sp., conidia, t
54 *Tetraploa aristata*, conidium, s
55 *Streptomyces* sp., spores, h

Magnification: all × 1000 diameters (1 mm = 1 μm)

PLATE 7

Spores of Basidiomycetes, Myxomycetes, Pteridophytes, Bryophytes, Protista [Protozoa], etc.

1 *Collybia maculata*, basidiospore, s
2 *Tricholomopsis (Tricholoma) rutilans*, basidiospore, s
3 *Russula nigricans*, basidiospore, s
4 *Russula vesca*, basidiospore, s
5 *Lactarius blennius*, basidiospore, s
6 *Lactarius rufus*, basidiospore, s
7 *Amanita (Amanitopsis) fulva*, basidiospore, s
8 *Pholiota (Naucoria) myosotis*, basidiospore, s
9 *Bolbitius vitellinus*, basidiospore, s
10 *Hygrophorus niveus*, basidiospore, s
11 *Armillaria mellea*, basidiospore, s
12 *Amanita rubescens*, basidiospore, s
13 *Inocybe geophylla*, basidiospore, s
14 *Nolanea staurospora*, basidiospore, s
15 *Cortinarius elatior*, basidiospore, s
16 *Coprinus atramentarius*, basidiospore: (a) profile, (b) face view, s
17 *Entoloma rhodopolium*, basidiospore, s
18 *Tilletiopsis* sp., basidiospores, t
19 *Sporobolomyces* sp., basidiospores, c
20 *Lacrymaria (Hypholoma) velutina*, basidiospore, s
21 *Hypholoma fasciculare*, basidiospore, s
22 *Psathyrella (Hypholoma) hydrophila*, basidiospore, s
23 *Fistulina hepatica*, basidiospore, s
24 *Stropharia aeruginosa*, basidiospore, s
25 *Thelephora terrestris*, basidiospore, s
26 *Panaeolus sphinctrinus*, basidiospore, s
27 *Panaeolina (Psilocybe) foenisecii*, basidiospore, s
28 *Phaeolepiota (Pholiota) spectabilis*, basidiospore, s
29 *Pholiota squarrosa*, basidiospore, s
30 *Merulius (Serpula) lacrymans*, basidiospore, s
31 *Crepidotus mollis*, basidiospore, s
32 *Fomes annosus*, basidiospore, s
33 *Stereum purpureum*, basidiospore, s
34 *Ganoderma applanatum*, basidiospore, s
35 *Bovista plumbea*, basidiospore, s
36 *Calvatia gigantea*, basidiospore, s
37 *Boletus elegans*, basidiospore, s
38 *Boletus scaber*, basidiospore, s
39 *Boletus chrysenteron*, basidiospore, s
40 *Badhamia utricularis*, myxomycete spore, s
41 *Fuligo septica*, myxomycete spore, s
42 *Leocarpus fragilis*, myxomycete spore, s
43 *Reticularia lycoperdon*, myxomycete spore, s
44 *Tilletia holci*, smut spore, s



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45 *Tilletia caries*, smut spore, s
46 *Urocystis agropyri*, smut spore, s
47 *Ustilago avenae*, smut spore, s
48 *Triphragmium ulmariae*, uredospore, s
49 *Melampsoridium betulinum*, uredospore, s
50 *Puccinia graminis:* (a) teleutospore; (b) uredospore, s
51 *Selaginella pulcherrima*, spore, s
52 *Funaria hygrometrica*, moss spore, s
53 *Barbula fallax*, moss spore, s
54 *Lycopodium*, club-moss spore, s
55 *Dryopteris filix-mas*, fern spore, s
56 *Pteridium aquilinum*, fern spore, s
57 *Phyllitis scolopendrium*, fern spore, s
58 *Tetramitus* sp., amoeboid cyst, t
59 *Thecamoeba* sp., t
60 *Gloeocapsa* sp., algal group, t
61 *Cladonia* sp., lichen soredium, s

Magnification: all × 1000 diameters (1 mm = 1 μm)

Outdoor growing soil for the moulds commonly widespread

- ***Alternaria*:** vegetables and fruit
- ***Aspergillus*:** vegetables flowers, cereal, hay, soil
- ***Botrytis*:** flowers e dead plants, fruit
- ***Chaetomium*:** wheat-straw
- ***Cladosporium*:** plants, fruit
- ***Epicoccum*:** plants, cereal
- ***Fusarium*:** plants and withered vegetables, cereal, fruit
- ***Helminthosporium*:** cereal
- ***Mucor*:** plants, wood, manure, fruit
- ***Penicillium*:** vegetables, hay, cereal
- ***Rhizopus*:** manure, timber
- ***Stemphylium*:** leaves, cereal, vegetables
- ***Trichoderma*:** timber, dead leaves
- ***Ustilago*:** cereal

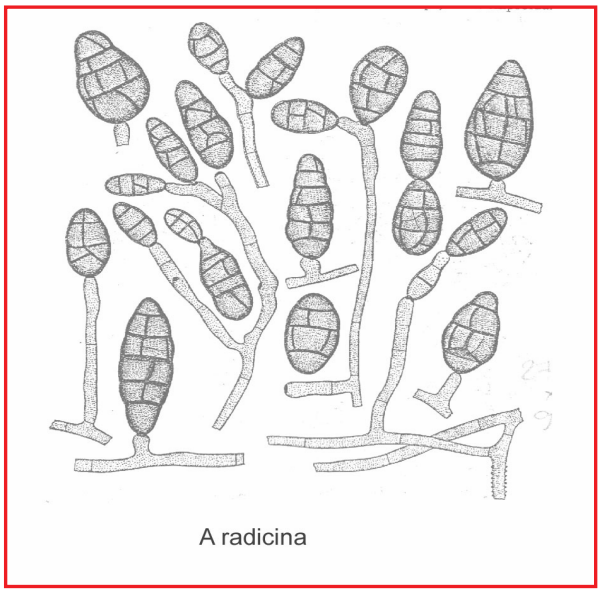
Indoor growing soil for the moulds commonly widespread

- ***Alternaria*:** materials (carpets, moquette etc)
- ***Aspergillus*:** walls, dust, paper
- ***Chaetomium*:** paper, materials
- ***Cladosporium*:** materials, fridge
- ***Epicoccum*:** paper, materials
- ***Fusarium*:** dampers
- ***Helminthosporium*:** materials
- ***Mucor*:** dandruff, dust, bread, marmalades
- ***Penicillium*:** walls, dust, materials, foods
- ***Rhizopus*:** walls, foods
- ***Stemphylium*:** cellulose
- ***Trichoderma*:** cellulose

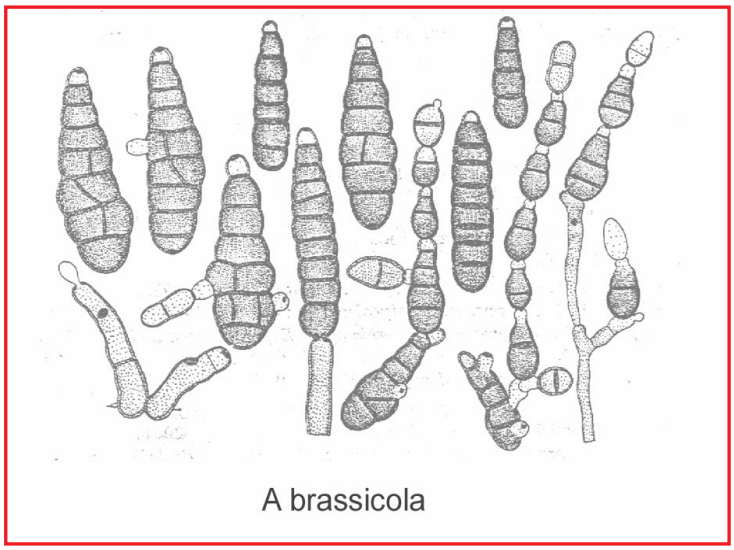
Conidia morphology

Alternaria

The conidia airborne diffusion occurred essentially in the summer period. The climate conditions with influence the growth of the mycelia is higher relative humidity, but the airborne presence of these conidia is favoured by dry climate conditions and moderate wind. In the figures the different shape of conidia without nib.

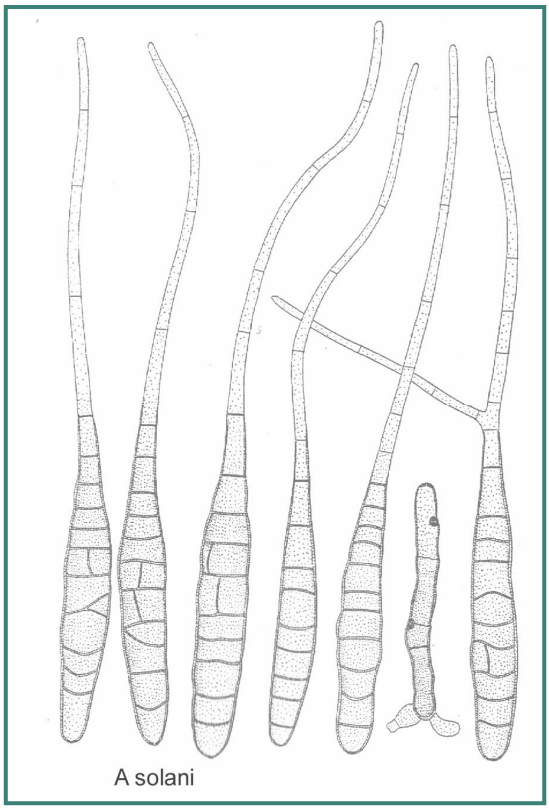


A radicina

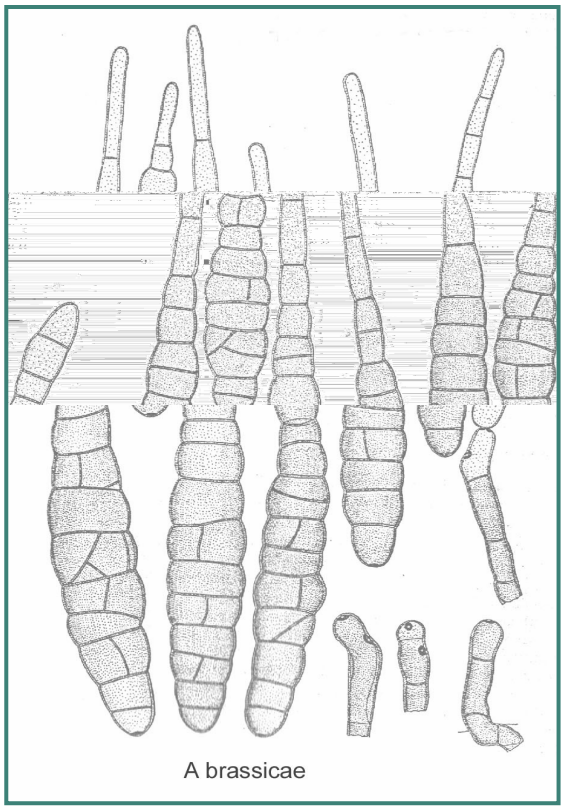


A brassicola

In the followed figures the different species of *Alternaria* conidia with a long nib.

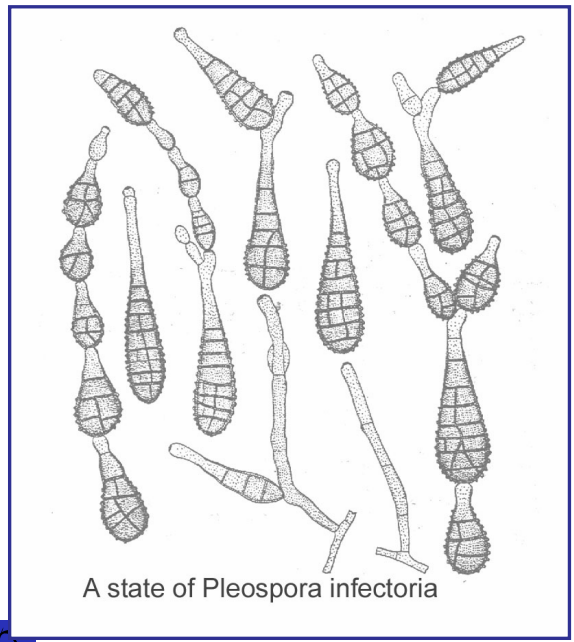


A solani

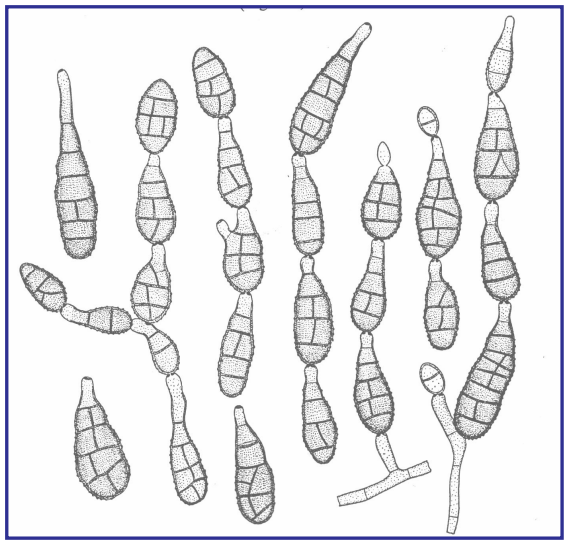


A brassicae

In Figures the different species of *Alternaria*, the conidia have a short nib.



A state of Pleospora infectoria



A general description of *Alternaria* conidia: clubs shape with more o less long nib. The conidia have more transversal and longitudinal septa.

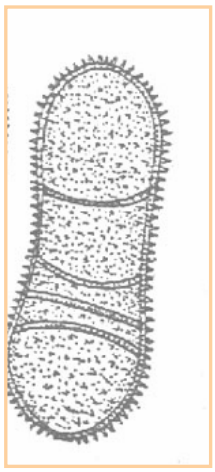
The dimensions are: 15-20 x 30-40 µm

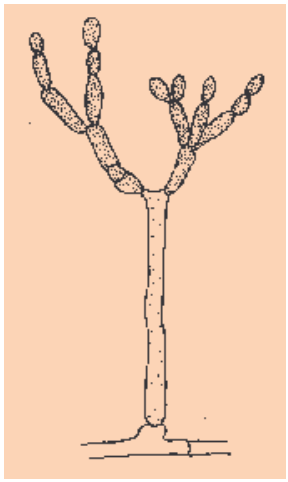
Cladosporium

Generally there are a lot of these conidia in the airborne samples, also thousands in the daily samples, essentially in June and September-October period. The mycelium creating a characteristic colonia brown, visible on the leaves and vegetables.

A general description of *Cladosporium* conidia: small stained in light brown, often smooth, in some species are wrinkled, with or without septa.

Dimension: 2-4 x 5-8 µm



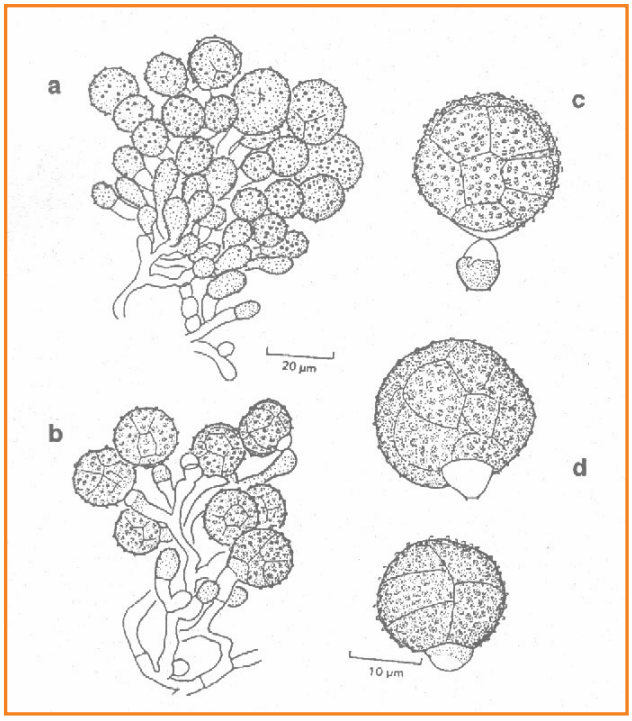


Epicoccum

The conidia are less sensible than *Alternaria* to cold temperatures and remain in the air during the autumn too. It grows on the cellulose and it's emi-parasite of cereals and vegetables, mostly saprophytic.

A general description of *Epicoccum* conidia: generating at the end of conidiophores, are globes, simples or pluri-cells, episporius echinate or reticulate. The color is brown-black.

Dimension: 10-15 x 20-25 µm



Stemphylium

Usually, they are in the air from April to November. The peak value occurred at the end of springtime. However, there are a few *Stemphylium* conidia in the atmosphere but their morphology is very similar to *Alternaria* conidia.

A general description of *Stemphylium* conidia: dark, with transversal and longitudinal septa; shape varying to ovoid to rounded, without terminal nib.

Color: dark
Dimensions: 15-20 x 30-40 µm

Polythrinciuium

A general description of *PolyThrincium* conidia:
Shape, bi-celled, pyriform. Color: yellow brown
Dimensions: 15-20 x 5-6 µm