MUSHROOM CULTIVATOR'S TIPS - Edited by Bill Russell

AGAR MEDIA TIPS

I make my agar in 6 oz artichoke jars. Each jar will fill 4 to 6 100 mm petri dishes. They are make of heavy glass and I do not have trouble with them boiling over in the pressure cooker. Rick Gibson, New Freeport PA.

Cultures which have been stored under mineral oil for a long time (over a year) often revive better by transferring to liquid media rather than solid media. Use standard formulations for Potato Dextrose agar or Malt Yeast Peptone agar BUT omit the agar. Dispense in test tubes and sterilize at the usual time and temperature. Eric Garrett, Columbus OH.

If you are using only two agar media, use a rabbit food pellet or an aquarium charcoal pellet thrown into your plate or slant to visually differentiate one type from another. K. McDonald, Louisville KY.

Oatmeal V-8 Agar: Cook 50 g Quaker oats in one liter water for 10 min. Add 50 ml unsalted V-8. While boiling hot, pour in blender jar and blend thoroughly. Add 20 to 30 g agar while blending and continue blending 2 to 3 minutes. This agar recipe does not contaminate easily, but it does not germinate mushroom spores easily, either. Rick Gibson, New Freeport PA.

Aureomycin (Chlorotetracycline HCL), the cheap antibiotic that you can purchase in feed stores cannot withstand the high temperature of autoclaves. It can, however, withstand pasteurization temperatures, and it is sterile as purchased. So it can be added to your agar mix after the agar cools, and just before pouring into your plates. Here's to bacteria-free cultures! Joe Kish, Canby OR.

When cloning mushrooms you almost have to use gentamycin sulfate in your agar (approx. 100 mg/l) to avoid bacterial contamination. Rick Gibson, New Freeport PA.

Hay infusion agar is good for some wood-loving fungi. Mix 50 g decomposing hay to one liter tap water, sterilize for 30 minutes at 15psi. Filter through cheesecloth, add 2g K_2HPO_4, 10g glucose, 15g agar, and add enough water to bring total volume back up to 1L. Sterilize and dispense as usual. Eric Garrett, Columbus OH.

Rabbit food pellets can be used in place of dog food for your dog food agar. K. McDonald, Louisville KY.

Add a pinch of wheat flour and sugar to a pint of malt agar for simple but effective growing medium. Add the proper amount of water and mix well in a blender. Use wheat germ in a pinch. Charles Stuart, West Chester OH.

Make PDY (potato-dextrose-yeast agar) with 10 g dextrose rather than the normally recommended 20 g and it will contaminate less readily. Rick Gibson, New Freeport PA.

To suppress bacterial growth when making tissue cultures from wild specimens, a combination of two antibiotics is far superior to just one. Here are two suggested combinations:
1. Gentamycin 50 mg/l + Chloramphenicol 16 mg/l.
2. Gentamycin 10 mg/l + Penicillin 50 mg/l.
Eric Garrett, Columbus OH.

Another way to help suppress bacteria in media is by adding the proper combination of inorganic salts. Make the following two stock solutions:

1. NaH_2PO_4 25 g
Na_2HPO_4 25 g
H_2O 250 ml

2. $MgSO_4$
10 g $FeSo_4$
0.5 g NaCl
0.5 g $MnSO_4$
2 g H_2O
250 ml
Add 10 ml of sol'n #1 and 20 ml of sol'n #2 per liter of medium. Eric Garrett, Columbus OH.

If a culture has become contaminated with mold, you can sometimes recover it by transferring to the following medium:
1 gm Potassium phosphate KH_2PO_4
0.2 gm Magnesium sulfate $MgSO_4$
0.1 gm Calcium sulfate $CaSO_4$
0.01 gm Ferrous sulfate $Fe_2(SO_4)_3$
10 Gm glucose

20 gm agar
1 L water
The mushroom mycelium will often outgrow the mold mycelium. Bill Russell, State College PA.

Vitamin B-1, also known as Thiamine, is an excellent media additive for encouraging the growth of more "fastidious" fungi. Crush one tablet, dissolve in a few ml of water, and add a couple drops to each liter of media you make. Eric Garrett, Columbus OH.

Adding 2 grams of powdered charcoal to a liter of your agar medium tends to enhance the natural mycelium color. For example, *Laetiporus sulphureus* will tend to grow out orange and *Lepista nuda* blue. Gregory Natale, Pittsburgh PA.

PLATES/SLANTS TIPS

After inoculating my Petri plates I wrap strips of duct tape around them to hold them closed. It helps keeps contaminants out by preventing accidentally lifting the lid and they're easily marked for identification. David Abbott, Stokesdale NC.

I have altered the procedure for cooling my knife. Instead of using & wasting an agar dish (which sometimes promotes bacterial transfer), I cool it momentarily in the chamber air and then dip it in 9% Clorox solution which I put in the chamber in a shot glass. No problems! David Germonpaez, St Clair MI

Keep some pre-poured plates in the fridge wrapped in saran wrap. This is always great if you find or grow a superior specimen and you want to make a quick tissue culture. Mike Stocks, Latham NY.

Put glass petri dishes in heavy plastic zip lock bags then microwave on high 3 minutes to sterilize them. Let cool then give them 3 more minutes to be sure they're sterilized. Rick Gibson, New Freeport PA.

Sometimes a transfer from a healthy culture fails to “take off”. Take the transfer tube or plate from the incubator and set it out in a room away from direct sunlight for a few days. Often this exposure gives the needed jog. Bill Russell, State College PA.

To store an agar medium until you need to pour it, tightly cap your flask of freshly sterilized medium and put in your refrigerator. When you need to use it, loosen the cap, put the flask in your microwave and heat it until it boils. Then pour your plates or slants. Glen Bailey, Elkin NC.

A contaminated culture can be purified by cutting a square of agar with the least amount of visible contamination and placing it face down on another petri dish or dishes (aseptically). As the mycelium grows through, a barrier is formed separating any contaminants from the desired culture. Keep repeating until a pure culture is obtained. Ken Christian, Reading PA.

To avoid and even clean up bacterial contamination, I dip agar and tissue transfers in a solution of 1/2 tsp Aureomycin/ 500 ml distilled water before moving to a fresh plate. Aureomycin is available from farm supply stores.
David Germonpaez, St Clair MI.

One-piece canning lids work great on small canning jelly jars containing prepared agar or small mouth quart jars of cooked grain. They allow for long term storage on un-inoculated media to keep handy. When sterilizing, leave the lids loose and after they cool, screw the lids down tight. Before sterilizing grain using this method, be sure to pre soak grain for 24 hours to avoid bacteria contamination. K. McDonald, Louisville KY.

SPORES TIPS

Spore prints are often contaminated with bacteria. Agar with gentamycin sulfate (approx. 0.1g/l) will allow them to germinate unfettered. Rick Gibson, New Freeport PA.

Spores can be frozen without loss of viability by suspending in a 10% aqueous solution of sterilized glycerol (glycerin U.S.P.; available at most pharmacies). Eric Garrett, Columbus OH.

If you want to measure the size of mushroom spores and you don't have an ocular micrometer for your microscope, add a bit of blood to your spore suspension and you can accurately estimate their dimensions by comparison. Human red blood cells are very close to 8 microns in diameter. Bill Russell, State College PA.

Both PDY and MYA germinate mushroom spores well. Rick Gibson, New Freeport PA.

SPAWN TIPS

Plastic 1 gal. milk or water jugs can be used as spawn-making containers and/or growing containers. Most plastic jugs will withstand 1 hr at 15 psi if there is plenty (1" or so) of water in the pressure cooker and a spacer or wash cloth is placed on the bottom. A nail-sized hole can be punched in the lid and stuffed with cotton or a mini-synthetic filter disc can be made and inserted on the inside of the cap. Fill the jug with the premixed dry spawn material - grain or otherwise - to about 40% of capacity, depending on how much your spawn material expands when soaked. Soak for 24 hours. Invert in the sink in a drainer/ strainer and drain thoroughly. Wipe off the top and screw on the lid loosely - do not tighten! Cover with aluminum foil and sterilize. When removing the jugs from the pressure cooker I always tighten the lids first, otherwise you may squeeze them and suck in contaminated air. Charles Stuart, West Chester OH.

An old teaspoon can be sterilized and used to transfer sterilized grain or whatever from container to container. Charles Stuart, West Chester OH.

Use a B vitamin complex in your grain spawn when sterilizing. It seems to yield faster mycelium growth.
Jeff Forbes, Bethel Park PA.

Keeping Relative Humidity below 50% in the lab and spawn incubation room will help prevent contamination.
Ken Christian, Reading PA.

Try using old coffee grounds as a spawn medium. Both wood growers like Shiitake and compost growers like S. rugosoannulata love it. Added wheat bran should make it even better. Joe Kish, Canby OR.

Have mold problems in your spawn or cultivation medium? Next time, get it ready for heat-treatment but let it set at room temperature for 24 hrs before pasteurizing or sterilizing. This delay lets any mold spores germinate. They're much easier to zap than ungerminated spores. Bill Russell, State College PA.

When using liquid cultures to do mass inoculations, a small amount of your final substrate should be suspended in your broth. This allows the mycelia to transcribe and translate the necessary enzymes needed to digest the final substrate, therefore reducing incubation time. For example, add some hardwood sawdust to the broth for the fermentation of *Lentinus edodes*. Ken Christian, Reading PA.

Try inoculating small jugs of sterilized peat/lime casing soil with grain, then transferring a spoonful of the soil (once colonized) to larger containers of grain. Shake. The many soil particles quickly spread the mycelium.
Charles Stuart, West Chester OH.

CULTIVATION TIPS

Another way to sterilize oak chips is on a cookie sheet for 20 minutes at 350¦ F. Joe Kish, Canby OR.

If you have a big lawn, here's a cheap & easy way to pasteurize large quantities of substrate. Make a 3'x3', 2' deep bed of grass clippings and water it. Set a large plastic garbage bag 1/3 to 1/2 full of moist substrate on the bed and adjust the bag to make an evenly thick layer. Seal loosely. Next, mound grass clippings 2' deep over the bag and water. Cover with a blanket. Let set 3 days. The high temperature from composting will pasteurize the substrate. Bill Russell, State College PA.

Cottonseed meal mixed 4-7 to 1 with lime is an excellent nutritive additive to straw substrates and it doesn't easily contaminate. Avoid clumping - mix well. Charles Stuart, West Chester OH.

Sandwich size zip lock plastic bags work great as humidity tents when fruiting mushrooms in quart jars. Simply place an open bag on top of the mouth of the jar when the culture is ready to fruit. The cultures easily receive the proper light and the humidity can be adjusted by increasing or decreasing ventilation Moving the bag further down on the jar will decrease ventilation. Clear grocery bags make good humidity tents when fruiting mushrooms in buckets or pails. K. McDonald, Louisville KY.

When you just can't pasteurize your compost, but the insects are intolerable, try pouring some boiling water over the substrate and then letting it drip dry. That's not much of a pasteurization, but you won't see anything walking around after that. Joe Kish, Canby OR.

“Liquid Seaweed” extract from feed and seed stores is a good nutritional additive to spawning and fruiting substrates. David Germonpaez, St Clair MI.

If you have to park your car in the summer sun with the windows rolled up for security you can use the high heat build-up to pasteurize plastic bags of spawning or growing substrate. Just put the bags in your car for 3 days and shake them up daily. Bill Russell, State College PA.

A cheap tray for your spawn is a dish washing pan. I use the 14"x12"x7" size. I fill it about 5" deep with pasteurized straw. Then I cover it with plastic. I use about 1" casing. It will yield about 1 lb of mushrooms with 4 or 5 flushes. Jeff Forbes, Bethel Park PA.

5 mg. of pure aureomycin (chlorotetracycline HCL) dissolved in water or wort and added to 1 qt. of compost will help control unwanted bacterial contaminants. It is available at most pet and feed stores in bulk
and is cheap. The Alchemist.

Can't find hardwood chips for a small mushroom crop? Get a bag of backyard broiler's hickory chips from your supermarket. Bill Russell, State College PA.

Try using compost as a casing mixture in garden-grown mushrooms. Often it gives surprisingly good results. David Abbott, Stokesdale NC.

I hate mixing casing soils and buffering them. Instead, I use ProMix or another semi-synthetic soil mix available at most nurseries. Wetted down overnight right out of the bag and sterilized or pasteurized, it makes an excellent casing that supports heavy flushes of almost all mushroom species. Make sure you get a neutral mix, as some are formulated for acid-loving plants. It may be a good idea to verify the PH after soaking just to be sure. Mike Stocks, Latham NY.

Complete sterilization of composts and casing at 15 psi for one hour is 100% superior to pasteurization. Growth will be the same and with less contamination. The Alchemist.

The spun polypropylene "Floating Row Cover" material, available at gardening stores under various trade names, is an excellent cover for mushrooms grown outdoors, whether in beds, rows or mini-environments. It shades direct sunlight, inhibits dehydration, protects from heavy rainfall and discourages cats from using your mushroom bed as a toilet. Inexpensive and effective-especially if you arc a support or A-frame creating a mini- greenhouse. Mike Wells, Portland OR.

To grow oysters outdoors, I mix pasteurized straw with just plain wet straw in a 1 to 3 ratio, using the pasteurized straw (and the spawn) as the core. I cover with a sheet and keep it wet until it's run through. David Abbott, Stokesdale NC.

PH of casing should be nearly neutral, PH 7.0. However, PH of composts can vary, usually between PH 6.0 to PH 7.0 depending on the species grown. The Alchemist.

PH factor of composts and casings determine a mushroom's ability to fruit and sporulate abundantly. Hydrion PH papers 4.5 to 7.5 meets most needs. The Alchemist.

I've never had much luck growing anything on sterilized grain. Instead, I go down to the local nursery and make a deal with them: I buy 4 bales of straw and they shred it for me and re-pack it in heavy plastic bags. Total cost: $6.00 per bail. I then soak what I need overnight, drain for 2 hours, sterilize or pasteurize and inoculate. Adjuncts and supplements such as cottonseed meal, alfalfa or grain may also be combined for higher yields if properly sterilized. This works very well with most "exotic" spp. and yields much larger specimens. Also, if you have a lawnmower, you can shred it yourself for free! Mike Stocks, Latham NY.

Chopped corn cob pet litter mixed with bran is an excellent spawn/fruiting substrate mix for a variety of species. Mix in the same proportions as sawdust/bran: 4:1 or 5:1. Soak 24 hrs. Drain. Sterilize. Charles Stuart, West Chester OH.

Many times when cultivating on non-pasteurized compost you have problems with tiny mycelium-eating mites that turn beautiful healthy pinheads into decomposing disappointments. To combat this situation I have noticed that when you add predator long legged mites carefully selected from compost you are not using you can, depending on the size of the container, dramatically reduce the population of the mycelium eating mites. Eric Thorin, Eveleth MN.

For indoor cultivation, a 15 watt (18") gro-lux fluorescent light source mounted 3 feet above the casing will supply all lighting requirements needed for primordia formation and good mushroom growth. The Alchemist.

If you grow wood-rotters, it may be hard to be sure you are getting the right substrate (i.e. wood chips or sawdust). First, determine if you need hardwood, softwood or a mixture for your species. Then get out the phone book and look under "Mills" or "Lumber" or "Logging" for what is known in most places as a "Wet Miller". These are the people who take big logs, strip the bark and then mill the logs tosize. Wet millers usually sell their chips to paper companies and almost always have separate mills for hardwoods & softwoods (they require different tooling). If you explain what you want the chips for and that you might be interested in purchasing a quantity if they meet your needs, they are usually more than willing to let you come and take a "sample" (my sample consisted of 8 giant trash bags!). Just be sure to arrive on the day they finish milling so you get the wettest, cleanest and freshest chips and sawdust, and bring trash bags and a clean shovel. If you have a really big outdoor bed, some places are even willing to deliver chips to your door! It is always a good idea to soak your chips a day or two to insure maximum water content. I live in Albany, NY, a place you wouldn't expect to find any logging or lumbering - but I had to drive only 15 minutes to get excellent chips! Mike Stocks, Latham NY.

EQUIPMENT TIPS

The local Kmart store supplied me with a nice humidity indicator and temperature guage made by Springfield that has two dials for about $6.50. The thermometer reads in both C and F. The hygrometer is scaled from 10% to 100 %RH. It's a beautiful instrument that can sit on a table or hang from a wall. Joe Kish, Canby OR

Cut off the bottom half of a large mouth quart jar and then sand the newly cut top portion smooth. You can now take an autoclavable plastic bag, thread the top end of the bag through the "bottom" of the jar, and fold it over the threaded glass rim. Screw on the jar lid. The top portion of the bag will be sandwiched between the galss and the ring. This will give you the ability to work with bulk substrates like quart jars. K. McDonald, Louisville KY.

Use a large box, 2'x2'x18", as your inoculation chamber. Cut out the top and cover with clear plastic. Make two hand openings in the front, big enough for your jars. Cover these openings with a loose piece of plastic. Use an ion generator or Lysol to sterilize the interior. Wear rubber gloves and wipe everything that goes into the box with alcohol. I've had no contamination problem in two years. Jeff Forbes, Bethel Park PA.

A crock pot is great for pasteurizing small batches of straw. Check the garage sales. Mike Wells, Portland OR.

Don't use an alcohol lamp for a flame sterilizer. It's not hot enough. Instead, use a propane torch with the flame set low. You'll be surprised at how much time you'll save when you do culture work. Otto Snow, FL.

Cheepo thermostats for small incubators: Aquarium heaters. Carefully break the glass off below the heating element. Remove heater element and re-wire in series into one leg of your 120 VAC supply. Install with control know outside. Neon indicator plus thermometer will determine setting. They hold to about 2¦ F. Mike Wells, Portland OR.

Cheepo incubator heater elements: Yogurt makers. EIther intact or remove the heating element. Mike Wells, Portland OR.

To prevent CO2 buildup in small enclosed growing areas, like aquaria, tubs etc., converting a small aquarium pump into a vacuum pump works well to remove the heavier CO2 from the enclosed growing atmosphere. Just seal the pump in an air tight container with sealed holes for the cord, intake hose and outlet hose. Eric Thorin, Eveleth MN.

A great way to control humidity is to connect a 120 VAC humidistat to an electric crock pot of water that's set for warm. A reaervoir of water may be needed, such as an inverted gallon jug to supply it, as the water evaporates fast. A Barber-Coleman room Humidistat, Item Number 11-1725, costing $9.99 may be obtained from Surplus Center, 1015 West "O" Street, P.O.Box 82209, Lincoln, NE 68501-2209, (402) 474-4055. They require $1.50 handling plus UPS. Joe Kish, Canby OR

Cheepo hygrometers: You can spend a lot of money to buy one to determine the relative humidity of whatever environment you are measuring...or...you can pick up a couple of matched, inexpensive thermometers and make
your own. Mount them side-by-side with one open to ambient air and the other, by whatever means you devise, mounted next to a small reservoir of water. A narrow piece of wicking (such as used in kerosene lamps) should encircle the base of the wet-bulb thermometer and lead down to the water reservoir. At any given time there will be a differential reading between the dry thermometer and the wet-bulb thermometer. And that differential is the indicator of humidity. Mike Wells, Portland OR.

Cheepo incubators: Thick-walled styrofoam containers used to transport frozen meats. Check with your butcher. Mike Wells, Portland OR.

Use a PH testing device carried at garden supply centers for your casings and substrate tests. They are accurate to about 0.2% from tests we've made and cost only $20 -$25. Prepare your casing, balance moisture and test PH according to the instructions that come with the device. Glen Bailey, Elkin NC.

Before you leave Kmart with your humidity-temperature guage, select an accurate one by comparing in-store readings with an expensive model on the shelf. Sam Thomas, Yuma AZ.

After sterilization, I usually leave my cooker sealed and cover with a clean trash bag and wait until the next morning to inoculate. Spraying Lysol inside the bag first doesn't hurt. Charles Stuart, West Chester OH.

Friends working at "old" hospitals can sometimes get liquidated useful equipment very cheap or sometimes even free. Ken Christian, Reading PA.

Buy a min and max thermometer ($10-$15) and check the temperatures at various points in your house. You will find constant temperature at various spots which you can use to advantage in mushroom growing. For example, my hot water tank is always between 75°-82°- great for spawn run and agar growth. The basement bathroom floor is 55°-62° in winter which is great for fruiting. The closet upstairs is 78°-86° from April through July. You will find patterns of temperatures useful to mushroom cultivation in your home too. Jeff Forbes, Bethel Park PA.

CHEMICALS TIPS

70% isopropyl alcohol is as efficacious as 90%. It costs less, is easier on the hands and has a lower flash point. Mike Wells, Portland OR.

Spray your arms and hands with Lysol before doing sterile culture work but use caution if working around an open flame as the Lysol is flammable. Use hand cream liberally afterwards to avoid the drying effects of the Lysol - especially in the dry winter months. Charles Stuart, West Chester OH.

For disinfecting laboratory countertops, a combination of two solutions is more effective than one. Alternate between a 3% solution of original formula Lysol brand disinfectant (concentrated liquid) and 10% solution of household bleach. NOTE: do not mix, rather, keep two separate bottles handy. Wipe first with one, allow to dry, then wipe with the other. Eric Garrett, Columbus OH.

Iodophors are very effective sanitizers and cleaning agents that contain iodine and phosphoric acid. At concentrations of 12.5 ppm (1/2 fluid oz or one talespoon per five gallons), they kill bacteria, are non-corrosive, non-staining, and don't need to be rinsed off as they quickly evaporate. They should only be used with cold water; they stain above 120|F. Available from brewing supply dealers. Joe Kish, Canby OR.

Best way to adjust PH is with a nutrient acid that's also a vitamin. Ascorbic acid is also vitamin C. Joe Kish, Canby OR

MISCELLANEOUS TIPS

Every mushroom cultivator should read "Growing Wild Mushrooms" by Bob Harris. The Alchemist.

When using the standard two-piece lids on jars, I like to wrap the tops tightly with aluminum foil before sterilizing for an extra measure against contamination. K. McDonald, Louisville KY.

According to Jack Czarnecki (Joe's Restaurant) there are a few poisonous puffballs. As a general rule, anything over softball size is usually safe. (And it should be cream cheese-white inside). Ken Christian, Reading PA.

Around here the power company is constantly cutting trees that encroach on their sacred right-of-way. I take an ax and cut wedges out of the remaining stumps, fill with spawn, and fit the wedge back in. I've tried this with Shiitake, Hericium and other wood growers. Sometimes it works just fine for outdoor mushroom cultivation! David Abbott, Stokesdale NC.

When collecting wild specimens that require you to climb hills, trek through thickets and brush and over long distances, I have found that a light sturdy wicker basket is an adequate tool for any situation and is extra beneficial in permitting moisture exchange allowing the specimens to not get icky on the return trip. Eric Thorin, Eveleth MN.

Regular body heating pads or reptile heating pads are useful in small incubation chambers. Aquarium heaters submerged in a large narrow mouth jar of water can be used to heat and humidify small incubation chambers. K. McDonald, Louisville KY.

Instead of using commercial jar lid filters for making spawn, etc., I use coffee filters. First I cut the filters to fit the jar (or any other container) mouth. To prevent molding, I soak them in a solution of 1/4 tsp Potassium sorbate (available from home wine-making suppliers) in a cup of water. After drying, I put them in the jar lid and screw the lid on the jars. Finally, for more insurance against contamination, I add a drop of tincture merthiolate to the filter through the hole in the jar lid. Bill Russell, State College PA.

When coming across wood-inhabiting species in the forest that you want to culture but the specimens are too decomposed, one can always - if it is a small completely dead tree - cut the colonized section out and bring it home. If you duplicate the fruiting conditions, your efforts often are rewarded with fresh, viable specimens. Eric Thorin, Eveleth MN.

Use large plastic bags as sterile inoculation chambers for small grain to grain transfers. Simply place items inside the plastic bag, spray thoroughly with Lysol, and tie off. After a few minutes, perform the transfers by working from the outside of the bag. Your sterile environment inside the bag will be undisturbed - your hands and contaminants will be outside. Don't use this method near open flames, since the Lysol spray is flammable. K. McDonald, Louisville KY.

In my area there are a lot of farms with cows. The manure from these cows contaminates the water supply, not only of that farm, but also that of adjacent areas. A lot of farms are now installing expensive cement manure handling systems to prevent this, but in many cases this is too little too late. I am now experimenting with using king Stropharia (*Stropharia rugoso-annulata*) and other fungi as a "Myco-filtration" system of water supplies cheaply. As you know, *S. rugoso-annulata* has a very tenacious mycelial network and holds woodchips very well. When a bed of woodchips containing Stropharia mycelium is laid across a known water run off about one to two feet deep(?), the contaminants (ie. E. coli) are filtered out of the water and probably eaten by the mycelium. Perhaps other readers are doing similar research and can help to develop a marketable system of "Myco-filtration". Ken Christian, Reading PA.

When making tissue transfers from a fresh mushroom specimen to an agar plate, first sterilize the tissue pieces by briefly dipping them in a solution of 1 part Clorox to 9 parts water. Do not puncture the pieces during the transfer to avoid pushing contaminants into the tissue. Rather, slice the pieces off the mushroom with a sterile blade, lift them into the Clorox solution and lift them out and onto the agar. This method greatly increases your chances of getting uncontaminated tissue cultures. Bill Russell, State College PA.

INDIVIDUAL SPECIES TIPS

GROWING OYSTERS (Pleurotus ostreatus) ON PAPER TOWELS AND BRAN Gordon Young, Florence MA.
This method is good for the city dweller without access to wood. It's also good for high contamination areas - better than most newspaper methods which can produce a lot of contamination.

Needed: Paper towels, bran, quart Mason jar, screw ring top, filter disc, distilled water.
1) Lightly stuff bottom of jar with paper towels.
2) Add a thin layer of bran.
3) Lightly stuff a layer of paper towels.
4) layer of bran.
5) Continue to layer until you reach the top of the jar.
6) Use no bran on top. (Prone to contamination).
7) Add Distilled water until the towels are saturated.
8) Turn jars upside down to drain excess water.
9) Put lids & filters on jars and sterilize for 1 hour at 15 PSI.
10) Cool jars and inoculate from top with agar.
11) Put a dome of aluminum foil over the lid to prevent evaporation. Incubate.
12) Remove lid and set out to fruit.