Mushroom cultivation


Rammed Earth
Mushroom House

3 stages in mushroom production

Steps in mushroom production

(the bag system)

1. Preparation of Potato Dextrose Agar **(P.D.A)**
   - **Inoculation with tissue culture**
2. Spawn preparation
   - **Inoculation with PDA culture**
3. Substrate or compost preparation for fruiting bag
   - **Inoculation with spawn culture**
4. Monitoring moisture, harvesting
5. Vermicomposting spent substrates

Preparation of P.D.A medium

Material

- Potato 200g
- Dextrose/glucose 20g
- Agar 15g
- Water 1 litter

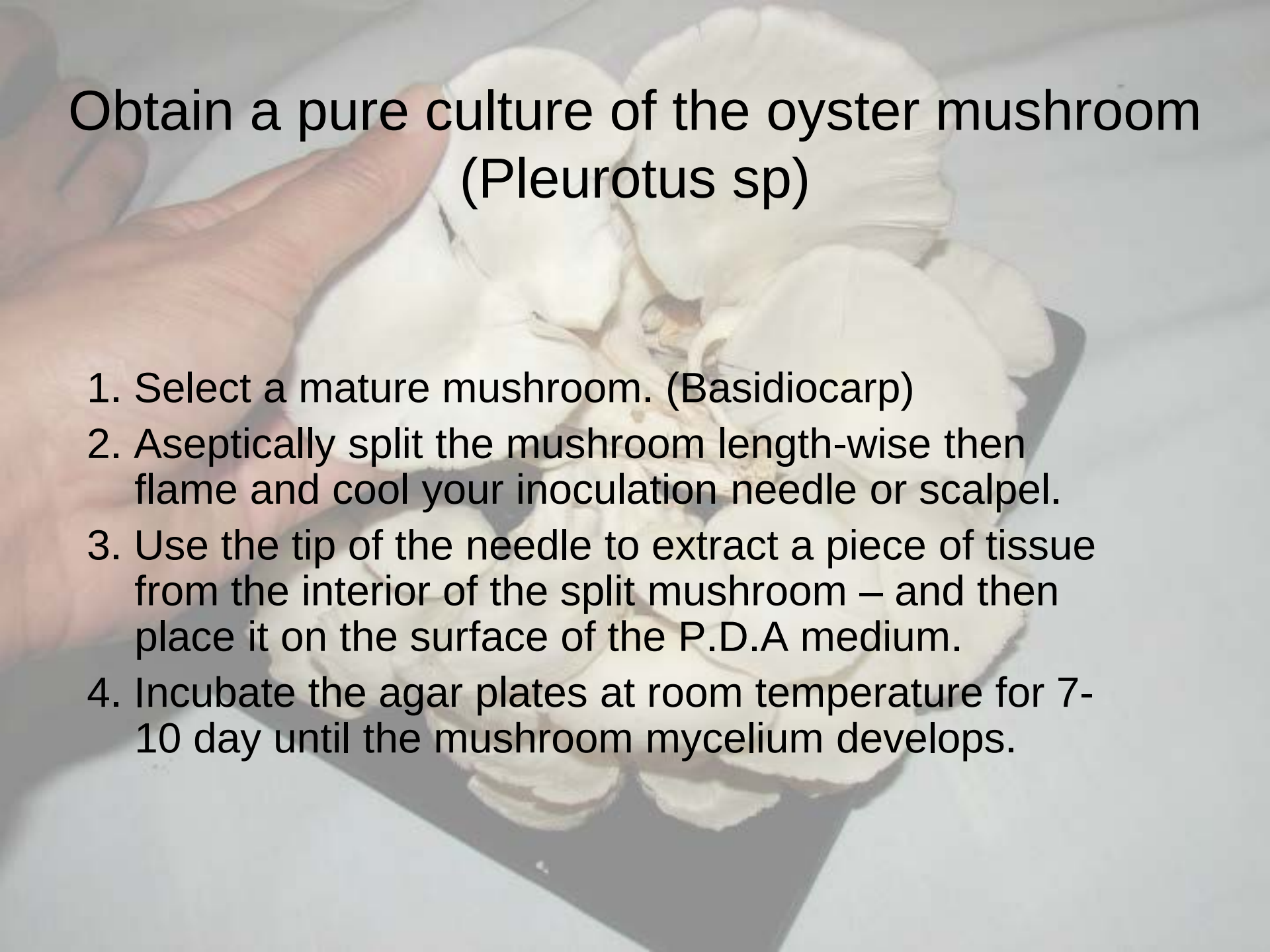
Preparation of P.D.A medium

1. Wash and cut some potato tubers into cubes of about 1cm in size. Weigh out 200g of the potato.
2. Transfer the potato into a pot and pour 1L of water into pot
3. Boil the potato cubes on low heat for about 20mins.

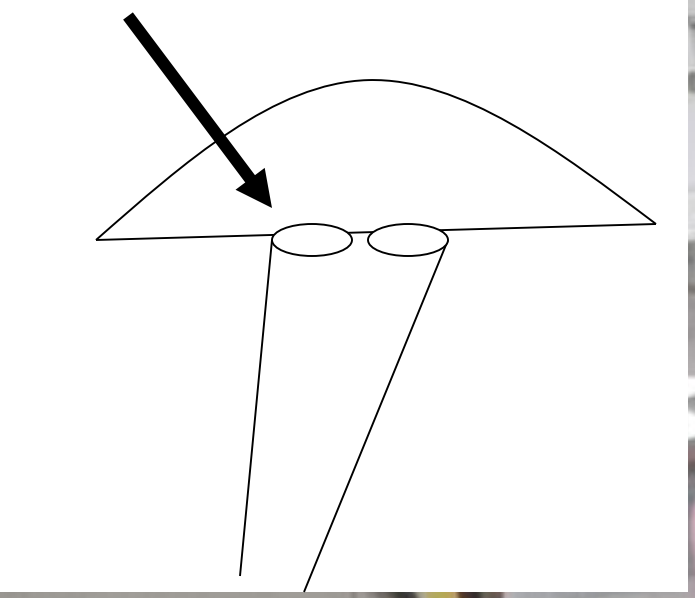
Preparation of P.D.A medium

4. Strain out the softened potato cubes and return broth to continue boiling.
5. Add 15g of agar powder and 20g of dextrose to the broth and stir to dissolve them.
6. Pour broth suspension into clean flat bottles. Fill each bottle 3/4 full. Cap each bottle with a cotton plug and sterilize in a pressure cooker for 20-30 mins at 15 pounds per square inch.
7. Allow the sterilized agar medium to cool and place the bottles on an incline.

Obtain a pure culture of the oyster mushroom (Pleurotus sp)



1. Select a mature mushroom. (Basidiocarp)
2. Aseptically split the mushroom length-wise then flame and cool your inoculation needle or scalpel.
3. Use the tip of the needle to extract a piece of tissue from the interior of the split mushroom – and then place it on the surface of the P.D.A medium.
4. Incubate the agar plates at room temperature for 7-10 day until the mushroom mycelium develops.



extract a piece of tissue from the interior of the split mushroom

Tissue culture to PDA


Inoculation from PDA to Sorghum / Brown Rice

Spawn preparation

- Materials

Sorghum grain or brown rice 10kg

Clean bottles 100

- Method

If using sorghum obtain mature sorghum grain

Wash grain and soak it overnight

Boil grain for about 30 minutes

Allow grain to dry

Fill 2/3 of each bottle with the grain

Spawn preparation

Place the cotton plug on each bottle and sterilize in a pressure cooker for 20-30 min. at 15 pounds per square inch

Cool the sterilized bottles

How to inoculate sterilized sorghum grain or brown rice with the pure culture of mushroom mycelium.

- Flame and allow your inoculation needle to cool.
- Remove cotton plug from P.D.A culture medium and cut out a 1×1 cm block of mycelium. Flame the mouth of the bottle and return the cotton plug.
- Remove cotton plug from sorghum grain bottle and flame the neck of the bottle. Insert the block of mycelium tissue above and place it in the center of the surface of the grain, with mycelium surface in contact with the grain.
- Return the cotton plug.
- Incubate the bottles at room temperature until the mycelium has completely colonize the grain.

Substrate preparation (fruiting bag)

Spray with FAA
Turn day 3 & 6

Aloha Style

Pale	MUSHROOM GROW BAG MEDIUM		
32	sawdust	195	kl
	D1 rice bran	50	kl
	Limestone-fine	1.25	kl
	gypsum	1.25	kl
	volcanic dust	0.625	kl
	granite dust	0.625	kl
	EM1	150	ml
	Molasses	150	ml
	water	3000	ml
		248.8	total dry

Original Thai Food Style

- 100kg Sawdust
- 5kg Rice bran
- 1kg Lime(CaCO3)
- 1kg Gypsum (CaSO4)
- 200g Rock phosphate
- 200g Magnesium sulphate(MgSO4)
- 200g Aloha Rock Dust

- EM, molasses, polyethylene autoclave bags, plastic, cap

280 bags


2007/10/28


Rock Dust

Method

- Weigh and thoroughly mix all the ingredients listed above on a concrete floor.
- Water(10L), 10ccEM + 10cc molasses and water and mix the substrate until a50-60% humidity is achieved.

Ferment 5 days and incorporate 800- 1000 g per plastic bag.

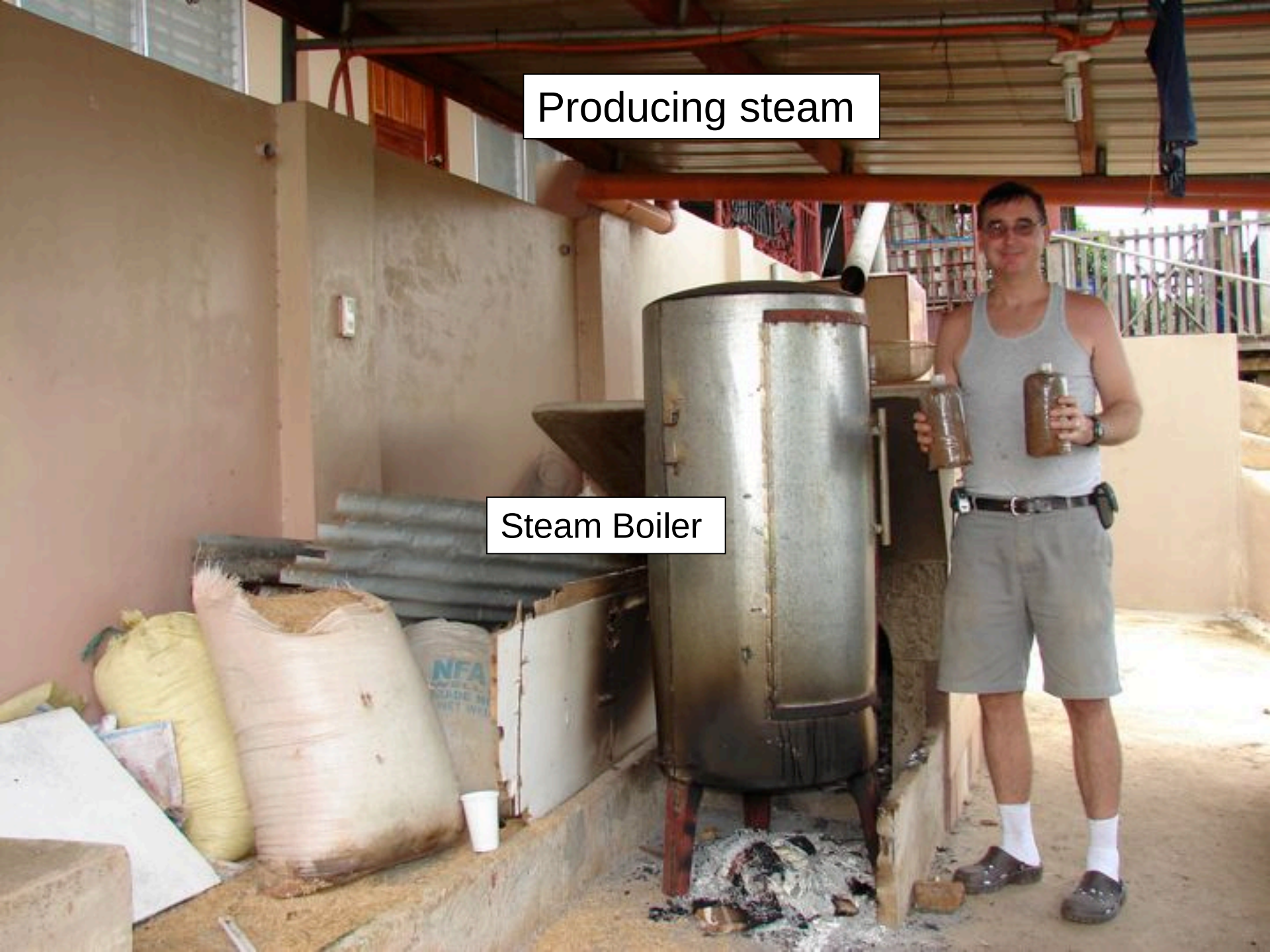
Compact the substrate in the plastic bag. Place a collar over the neck of the bag and pull the plastic outwards before capping it with a cotton plug.


Bag all materials
and pasteurize
in multiples of
84
168
252
336
420
504
588

Next

Sterilize the substrate bag in a steam boiler for 3-4 hours.

Allow the substrate to cool before inoculating each of them with well-colonized sorghum grain. (Spawn)


Producing steam
Steam Boiler


Producing steam
Water
Fire


21 bags/layer x 4
84 bags/batch


24 hrs cooling


Inoculating pasteurized bags
Loosen Spawn


Inoculating pasteurized bags
Aseptic [flame]


Inoculating pasteurized bags
Aseptic [flame]

Next

(Spawn)

Bags are inoculated with spawn by unplugging them and aseptically depositing some colonized grain on the surface of the substrate.


Inoculating pasteurized bags
Aseptic [flame]


Oyster mushroom
(*Pleurotus spp*.)
Var.Hungary

Yanagi mushroom


Leechee mushroom

Wood ear mushroom (*Auricularia spp*)

Wood ear mushroom (*Auricularia spp*)

Oyster mushroom


Too dry

White albino Hungarian

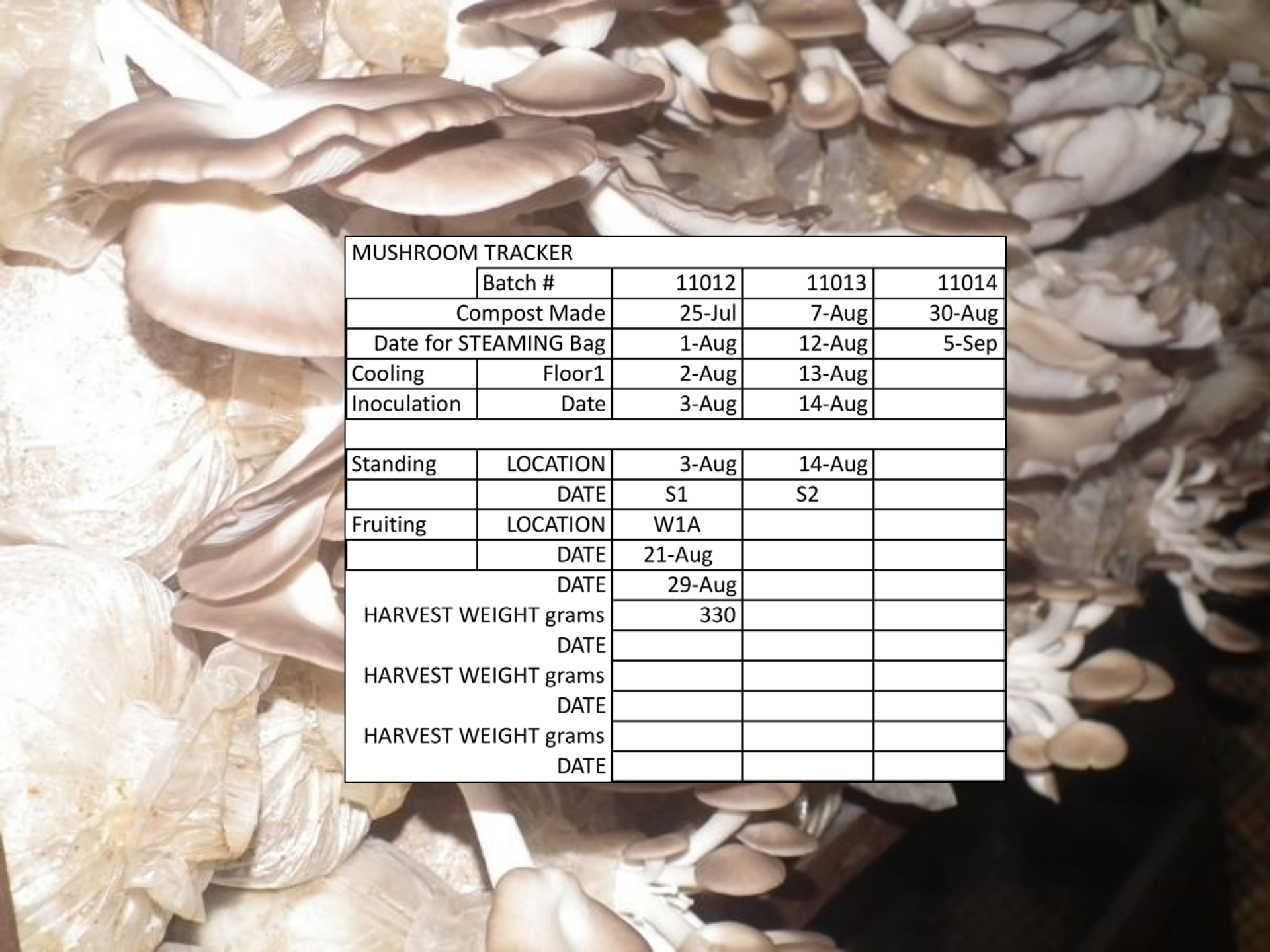

Thai Style


Thai Style


Thai Style


Contamination
Black bag syndrome


Kindly
make
complete
harvest
of stem



MUSHROOM TRACKER				
	Batch #	11012	11013	11014
Compost Made		25-Jul	7-Aug	30-Aug
Date for STEAMING Bag		1-Aug	12-Aug	5-Sep
Cooling	Floor1	2-Aug	13-Aug	
Inoculation	Date	3-Aug	14-Aug	
Standing	LOCATION	3-Aug	14-Aug	
	DATE	S1	S2	
Fruiting	LOCATION	W1A		
	DATE	21-Aug		
	DATE	29-Aug		
HARVEST WEIGHT grams		330		
	DATE			
HARVEST WEIGHT grams				
	DATE			
HARVEST WEIGHT grams				
	DATE			

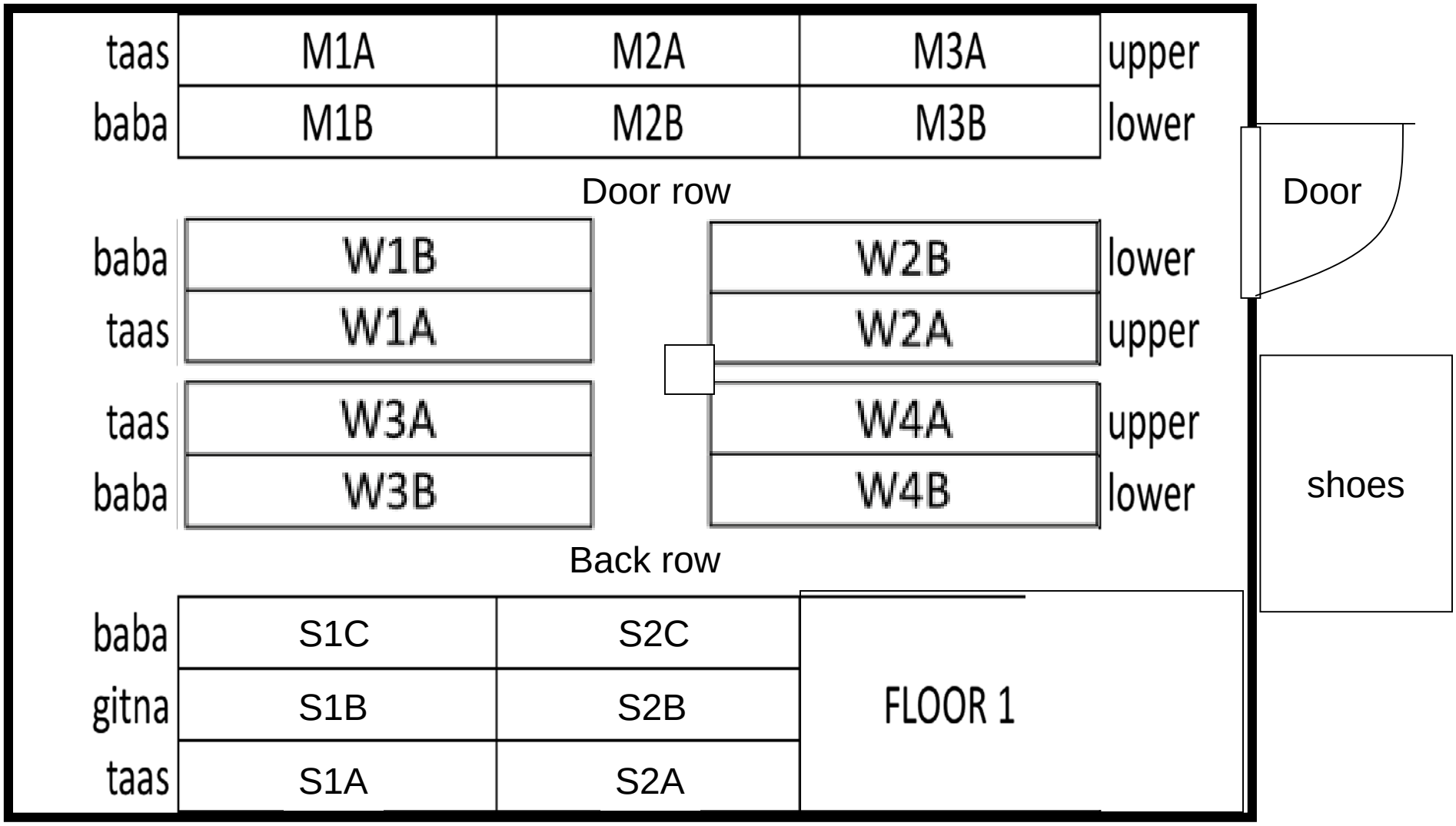
Pasteurizer


Cooling
Floor 1


Mushroom House
↓ Straw mushroom below ↓


Aloha
Mushrooms

Floor Plan


taas
M1A
M2A
M3A
upper
baba
M1B
M2B
M3B
lower
Door row
Door
baba
W1B
W2B
lower
taas
W1A
W2A
upper
taas
W3A
W4A
upper
baba
W3B
W4B
lower
shoes
Back row
baba
S1C
S2C
gitna
S1B
S2B
FLOOR 1
taas
S1A
S2A


Door row


Standing
S2A
Back row
S2B
Floor1
S2C


Door row
Back row


Door row
Back row


Floor Plan
W4A
W2A
W4B
W2B


Door row
M1A
W1A
M2A
M1B
M2B
W1B


Straw mushroom grow area


Straw mushroom grow area
Straw bales

Non pasteurized outdoor beds by bale

Straw mushroom
(*Volvariella volvacea)*


Straw mushroom
(*Volvariella volvacea)*

Fun with Fungi

Thank You!

The End