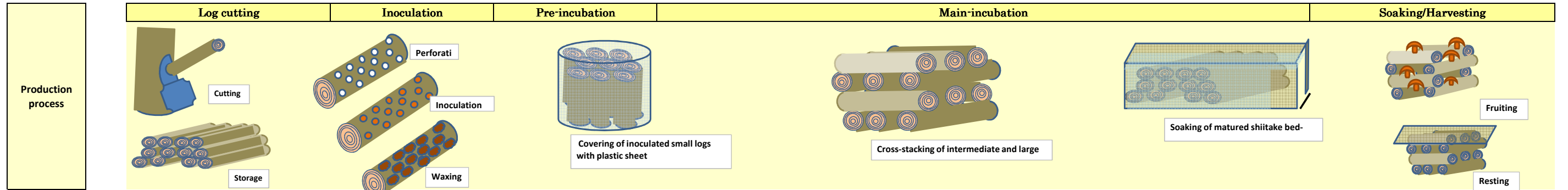


## Shiitake bed-log cultivation flowchart

**Lowland**

Wangdue 1,180 m  
Punakha 1,236 m

	Nov.			Dec.			Jan.			Feb.			Mar.			Apr.			May			Jun.			Jul.			Aug.			Sep.			Oct.		
	early	middle	late	early	middle	late	early	middle	late	early	middle	late	early	middle	late	early	middle	late	early	middle	late	early	middle	late	early	middle	late	early	middle	late	early	middle	late	early	middle	late
Rain fall mm	6.3			4.1			13.2			16.6			17.1			43.1			70.6			131.2			155.7			145.2			94.5			49.2		
Max. temp. °C	22.9			19.6			18.1			19.7			23.1			26.0			27.9			29.4			29.3			29.1			28.2			26.4		
Min. temp. °C	10.8			6.6			5.8			8.0			10.9			14.0			17.2			19.8			20.6			20.4			19.2			15.9		
Relative hum. %	78.2			78.6			77.6			76.4			73.1			72.7			73.8			77.8			81.0			80.4			81.2			77.8		



Working contents	Log cutting	Inoculation	Pre-incubation	Main-incubation	Soaking, fruiting: harvest	Resting
	<ul style="list-style-type: none"> <li>-Cutting</li> <li>-Cutting to size, transporting</li> <li>-Sorting by log diameter, storage</li> </ul>	<ul style="list-style-type: none"> <li>-Drilling of holes</li> <li>-Inoculation</li> <li>-Waxing (sealing)</li> </ul>	<ul style="list-style-type: none"> <li>Pre-incubation Small-diameter log: (cover with plastic sheet)</li> <li>Intermediate-diameter log: (cover with plastic sheet)</li> <li>Large-diameter log: (cover with plastic sheet)</li> </ul>	<ul style="list-style-type: none"> <li>Remove cover --&gt; incubation (cross-stack or stand on ends with spacing in between)</li> </ul>	<ul style="list-style-type: none"> <li>Soaking, fruiting: harvest</li> <li>Resting</li> </ul>	<ul style="list-style-type: none"> <li>Soaking, fruiting: harvest</li> </ul>

Shiitake mycelia	Culture and storage of seed fungus	Logs colonized by shiitake mycelia	Spread and maturation of mycelia	Stimuli to induce fruiting (watering, temperature, light) growth of primordia	Fruiting body formation, phototropism, nutrient uptake
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Important points & diseases	<ul style="list-style-type: none"> <li>-When cutting logs, do not use logs infected with <i>Hypoxyylon</i> spp.</li> <li>-After cutting, if the log surface becomes too hot (through exposure to direct sunlight, etc.), spores of harmful fungi will germinate; thus, keep logs in the shade and avoid high temperatures.</li> <li>-Be careful not to damage the bark.</li> <li>-Small-diameter logs dry out more easily than intermediate and large-diameter logs; therefore, sort logs according to size.</li> </ul>	<ul style="list-style-type: none"> <li>Be extremely careful when inoculating with spawn.</li> <li>-Check that spawn is not contaminated.</li> <li>-Scrape the spawn surface using a sterilized implement and discard the scrapings.</li> <li>-Perform inoculation and waxing under sterile conditions.</li> <li>-A log moisture content of 38 to 42% (wet base) is suitable for inoculation.</li> </ul>	<ul style="list-style-type: none"> <li>The purpose of pre-incubation is to allow the spawn to colonize the logs.</li> <li>-Allow shiitake mycelia to spread to the inner bark near the inoculation hole.</li> <li>-Watch carefully for contamination by the harmful fungi listed to the right.</li> <li>-Avoid high temperatures and excess moisture.</li> </ul>	<ul style="list-style-type: none"> <li>Characteristics of harmful fungi:</li> <li>-<i>Hypoxyylon</i> spp. on log ends: Ascospores germinate at high temperatures (90% germination within 3 days at 25 to 30°C) due to plastic sheet, etc. Reduce temperatures by removing plastic sheet, etc. Avoid drying under bark layer.</li> <li>-<i>Tricoderma</i> spp. on log ends: Young colonies will die if dried. Early treatment is important.</li> <li>-<i>Diatrype</i> and <i>Graphostroma</i> spp. on bark surface: Occur in high-temperature environments (due to direct sunlight, etc.) in the spring. Avoid high temperatures by providing shade.</li> <li>-<i>Schizophora</i> and <i>Merulius</i> spp. on bark surface and log ends: Fungi of both genres germinate and grow under excessive moisture and can spread through bark to bark contact.</li> </ul>	<ul style="list-style-type: none"> <li>-Soak in water that is 20°C or lower for 8 to 10 hours.</li> <li>-In hot, low-lying areas, cross-stack and cover the upper surface of the logs immediately after soaking, without performing steam treatment.</li> <li>-Harvest before the caps open too much. If they are left open for too long, they can become infected by harmful fungi or damaged by insects.</li> </ul>	<ul style="list-style-type: none"> <li>-For resting, leave the logs cross-stacked for approximately 40 days.</li> <li>-During the resting period, occasionally water so that the logs do not become too dry.</li> </ul>
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