Specialty Mushrooms as an Enterprise
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For more information on Small Farms, visit our website at: http://smallfarms.ifas.ufl.edu or contact your local County Extension Agent.

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Shiitakes

• “Shii” tree + “take” mushroom = Shiitake
• *Lentinus edodes* is the Latin name
• Grown throughout Asia for over 800 years
• Third most widely produced mushroom in the world
History

• One of the top exported products from Japan
• Production began in US in early 1970’s, continues today
• Three production approaches
  – Nutrient amended sawdust block
  – Log production using forced fruiting
  – Log production utilizing natural conditions and/or irrigation (this type is recommended for smaller producers)
Shiitakes

- A wood decomposer, typically saprophytic growing on dead tissue of deciduous trees.
- The fungus that feeds on newly dead hardwood logs.
- Oak logs are best for our area - laurel oaks and water oaks are fine.
- Blue jack or Black jack oaks are mentioned in the literature, sweet gum, maple, or hickory have also been used.
Shiitakes

- Fruiting is in the fall, early winter and spring.
- You inoculate the logs with spawn.
- You can also use dowels that are mushroom mycelium mixed with sawdust or wood.
5 Steps to Growing Shiitake Mushrooms on Logs

**Step 1- Ordering good quality culture, called spawn or inoculum**

- Strains are specific to type of production i.e. sawdust, forcing, soaking or irrigated
- Can be purchased in sawdust blocks or in hardwood dowels (plugs)
- **For Florida...**
  - Wide range C-41, C-15
  - Warm-weather CS-24, CS-125
  - Cold-weather CS-16, CS-11, CS-118
Step 2: Obtaining suitable hardwood logs

- Deciduous oak species are best (such as turkey, black jack, water & laurel)
- Straight, sapwood preferred
  - can use main trunk or larger branches
- Cut during winter months (Oct-Feb) when sap down
  - use pieces 3 to 8 inches in diameter & 3 to 5 ft in length
- Cut no more than 2 weeks to 1 month prior to inoculation
- Avoid damaging the bark (allows other non-desirable fungi to enter)
Step 3: Inoculating the logs

- Inoculate in shady area as direct sunlight damages spawn.
- Drill holes in rows with holes spaced 6 inches apart and do one row for each inch of log diameter in a diamond pattern.
  - A high speed drill (8,000-10,000 rpms) works best to drill a large number of logs.
  - Logs average between 35-50 holes each.
  - Use a 12mm drill bit for sawdust spawn or an 8mm bit for plug spawn.
- Depth of the hole depends on thickness of tree bark. For turkey or black jack oak, hole needs to be an inch deep. For water oak ¾ inch is enough.
Step 3: Inoculating the logs

- Carefully pack the holes with sawdust spawn or place hardwood dowel in hole
- If using sawdust, you must pack the spawn down into the hole with a 3/8” dowel rod or use a special tool.
- Seal over hole with melted food grade wax to keep out competing organisms
  - Use camel hair brush as plastic bristles melt in hot wax, sponges or cheese cloth.
Be sure and label logs with date and strain type
Step 4: Allowing Shiitake to colonize the wood

• Stack logs in a vertical position to increase water absorption

• In Florida, irrigation during periods of drought, high temperatures and windy weather will be necessary
  – About 20 minutes, 2 to 3 times per week

• Logs **MUST** be in deeply shaded area (60%-70% shade) to produce
Stacking Methods

Crisscross method

Lean to method

X-Pattern
Step 4: Allowing Shiitake to colonize the wood

• Takes from 4 to 9 months to colonize log (called spawn run) depending on climate, log diameter and strain to begin fruiting
• Logs will usually fruit for 3 to 5 years without additional inoculation depending on size of log and conditions
• Yields will vary, but each log can produce up to 5 lbs. of product over a three year period valued at $8 per lb. in a retail market venue
Shiitake Mushrooms Spawn Run Characteristics

- **Relative Humidity:** 60-75% for logs; 90% for sawdust blocks or artificial logs.
- **Substrate Temp:** Fastest growth 77°F. Below 41°F and above 95°F mycelia growth halts.
- **Duration:** 4-9 months for logs; 30-60 days for sawdust blocks.
- **CO₂:** None established.
- **pH:** 5-6
- **Fresh Air Exchange:** None.
- **Light:** None required.
Shiitake Mushrooms Pinhead Initiation Characteristics

- **Initiation**: Submerge logs and blocks in cold water for 24-72 hr.
- **Relative Humidity**: 95%.
- **Air Temp**: 59-68°F
- **Duration**: 7-14 days after soaking.
- **CO₂**: None
- **Fresh Air Exchanges**: 2 - 4/hr.
- **Light**: Ambient natural light
Harvesting Shiitake Mushrooms

- Once mushroom have started to fruit, the log and mushrooms should be kept dry.
- Harvest when the cap is 2/3 of the way open
- Cut stem flush with bark with a sharp knife.
- Store in a cardboard boxes or paper bags in a cool dry area.
For a hands on experience, plan on attending our mushroom workshop in Live Oak on Jan. 25, 2013 at the Suwannee Valley Agricultural Extension Center