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Abiotic disorders in mushroom

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Introduction:

Besides the biotic agents, which adversely affect the mushrooms, there are a large number of abiotic agents which create unfavourable environment for the proper growth of 170 Mushrooms: Cultivation, Marketing and Consumption mushrooms resulting in the quantitative as well as qualitative losses. These abiotic agents include temperature, relative humidity, low or high moisture in the substrate, pH, CO2 concentration in the room, wind velocity and fumes. Some of the most common abnormalities generally encountered during button mushroom cultivation are as under.

1. ABIOTIC AGENTS
2. TEMPERATURE
3. RELATIVE HUMIDITY
4. LOW OR HIGH MOISTURE
5. PH
6. CO2 CONCENTRATION
7. WIND VELOCITY FUME

Agaricus bisporus

Storma

Stroma, also known as sectors or sectoring, are noticeable aggregations of mushroom mycelium on the surface of spawned compost or casing. Distinct aerial patches of white mycelium form a dense tissue layer on the substrate surface. Stroma can be easily removed from the surface of compost or casing. Stroma that appears on the compost in small, localized patches can coalesce into larger areas. Stroma may form on the casing above a patch of compost-borne stroma or on casing in areas where stroma does not exist in the compost. Stroma on casing develops prior to pinning but quickly degrades once watering begins. Mushrooms can grow on stroma, but this is relatively uncommon.

Stroma and sectors are associated with the genetic character of the spawn, but they can also be induced if the spawn is mishandled or exposed to harmful petroleum-based fumes, chemicals, or certain detergents during preparation, storage, transit, or at the farm. Production practices. Cropping also affects the appearance of these abnormalities, but no specific relationship has been established. Excessive CO2, high water content in the

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compost, and a long spawn run period may all result in stroma. Large patches of stroma measuring 8 to 12 inches are frequently removed from compost or casing surfaces in the hope that the next generation of spawn will be normal and produce mushrooms.

Weepers /Strinkers /Leakers

Mushrooms described as 'Weepers' typically exude a large amount of water from the mushroom cap. Leakers are mushrooms that exude small water droplets from their stems or caps. These water droplets can be small and isolated from one another, or they can be numerous enough to cover the mushrooms completely. Weeping mushrooms can dissolve into white foam. Water collects on the casing surface beneath a weeper, causing the area to develop a putrid odour and become a'stinker'. The factors that cause a mushroom to become a weeper are unknown, but low-moisture compost (less than 64%) combined with high moisture casing is where weepers are frequently found.

The combination of these two conditions frequently promotes weeper mushrooms before and during the first break. In some cases, it may also represent the strain's degeneration.

Flock

Flock is a malformation of the mushroom cap and gill. It is physiologically induced. Premature cap opening and poorly developed or small gills with poor pigmentation are common features. It usually appears in the first flush and then disappears in subsequent flushes. Flock formation is influenced by genetic and environmental factors, as well as brown plaster mould and false truffles.

Hollow core and brown pith

These two disorders appear to affect cream strains more than other strains, though off-white strains may also have hollow cores. When the bottoms of the stems are trimmed after harvesting, a circular gap forms in the center of the stem. This hole may extend or shorten the stipe. When the hollow cut end portion is brown in colour, the sale price drops significantly. This abnormality appears to be associated with watering and water stress.

Rose comb

As the name implies, pinkish gills form large lumps and grow abnormally on the cap, giving the appearance of a comb. These abnormal gills appear in different places on the fruit body, giving it a swollen or spongy appearance. These mushrooms are not marketable. The abnormality is caused by smoke, gases, or vapours from kerosene oil, petrol, diesel paint, or oil products, among other things.

Purple stem/Black leg/Storage bum

Within a few hours of harvest or after being kept in cold storage overnight, the cut

stems of the mushrooms turn a deep purple. The color can sometimes be closer to black than purple, and it occurs in all strains of smooth white, off-white, cream, and brown. Mushrooms from the third break to the end of the crop are the most vulnerable. The conditions that cause this phenomenon in mushrooms are unknown, but the frequency and amount of water applied before harvest appear to influence its occurrence.

Scales or crocodiles

Scales form on the top of the cap as a result of high air velocity combined with low relative humidity. Excessive exposure to formaldehyde or pest control products can also cause the skin's outer layer to tear off. The scale symptoms lower the value of the mushrooms.

Long stemmed mushrooms

Mushrooms with long stems and small caps that resemble drum sticks can indicate virus infections, but they are frequently the result of high CO2 concentrations. Such conditions can be improved by increasing aeration.

Brown discolouration

Browning of small pin heads or half-grown mushrooms is very common on the top of the cap; scales arise due to high air velocity coupled with low RH. Excessive exposure to formaldehyde or pest control products can also cause the skin's outer layer to tear off. The scale symptoms reduce the value of mushrooms grown in seasonal farms. This could be due to high temperatures, sprinkling water under high pressure (maximum pressure is 0.4 atm), being highly chlorinated, or using too much formalin for spraying.

Mass pinning

Symptoms of mass pinning or pinning below the casing are common, particularly during seasonal cultivation. Such symptoms can be caused by a sudden drop in temperature, excessive aeration, or lowering the CO2 concentration earlier than recommended. Many abiotic disorders are strain-specific, with some producing high yields. Certain strains may be more sensitive.

Oyster Mushroom

As compared to white button mushroom, there are few physiological disorders recorded in oyster mushrooms. Reduced light in the cropping room results in longer and thicker stipes and pileus is partly reduced. Insufficient ventilation (1-2% Carbondioxide) and lowlight exposure induce bunched growth of mushrooms.

Problems and solutions in abiotic disorder: (Table No : 1)

Conclusion: Mushrooms can face challenges that aren't caused by pests or diseases but by the environment they grow in and how they're cultivated. Think of them as sensitive organisms—they rely heavily on

Table No. - 1: PROBLEMS AND SOLUTIONS IN ABIOTIC DISORDER

S.No.	PROBLEM	CAUSES	SOLUATION
1.	Lengthy stalk in mushroom	Mushroom shed contains more light and a higher concentration of carbon dioxide.	Provide proper air exchange by provision of sufficient ventilation.
2.	Cauliflower mushroom from the bed.	**a.** Over pressing of paddy straw during packing in the bed. **b.** Accumulation of carbon di-oxide in the cropping room.	**a.** Prepare correct beds using pressure. **b.** Maintain co2 level in the cropping room.
3.	Curled margin in the b mushroom.	**a.** Virus infection **b.** Low relative humidity.	**a.** Use virus free spawn. **b.** Maintain sufficient relative humidity.
4.	Dried mushroom buds.	**a.** High temperature and low relative humidity in the cropping room. **b.** Poor moisture mushroom beds.	**a.** Regulate the temperature and RH requirement of the mushroom. **b.** Prepare bed with paddy straw containing 60-65% moisture.
5.	Yellow patches mushroom caps stalk and on	Excessive water sprayed on mushroom flower.	Spray water on the beds only after a harvest of mushroom. Avoid spraying the water on fully opened mushroom.

getting the balance just right. If temperatures or humidity levels are off, or if they don't get the right amount of carbon dioxide or light, they start to struggle. Issues like poorly prepared growing material or exposure to fumes and chemicals can also throw them off course.

To keep mushrooms thriving, it's all about carefully managing their habitat. Monitoring and fine-tuning growing conditions help ensure healthy harvests and happy fungi! It's like taking care of houseplants, but with a delicate ecosystem as your responsibility.