

# The positives and negatives of mold



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BUSTER**

When you hear the word “ mold”, what comes to mind? Is it something green, fuzzy, and squishy? Do you immediately want to throw it away? Do you run screaming from the room or duck and hide? If you are a scientist, you will look more closely. You will look at mold in a different way, through different eyes. Mold is a whole new world to explore. It is important to understand what mold is, its harmful effects and its possible benefits.

### **What is mold?**

In the American Heritage Dictionary, mold is “ any of various fungous growths often causing disintegration of organic matter.” Molds are classified as part of the kingdom fungi (Ammirati, par. 6). They fall into the “ divisions Ascomycota, Basidiomycota, Chytridiomycota and Zygomycota” (Ammirati, para. 6). Molds “ are microscopic fungi that live on plant or animal matter” (USDA, par. 1). They are made up of multiple cells and “ can sometimes be seen with the naked eye” (USDA, par. 2). Unlike other plants, mold has no chlorophyll, but rather it lives on food or decaying matter (Ammirati, par. 1). When mold appears on food, it can be greenish in color, or white and cotton-like in appearance.

Mold has at least three parts which include the root threads, which invade the food it lives on; the stalk, which rises above the food, and the spores which form at the ends of the stalks which give the mold its color (USDA, par. 2). Mold develops from spores, which when they are dry, “ float through the air until they find suitable conditions to start the growth cycle again.” (USDA, par. 8). When a mold spore lands on damp food, “ it swells and begins to grow by producing tiny hyphae (threads). The hyphae form a tangled mass called a mycelium, which in turn produces aerial pyphae called stolons.

Rootlike structures known as rhizoids anchor stolons in the food” (Ammirati, par. 3). This is what allows the mold to stay on the food. By the time the mold appears to the eye on the surface of food, it has already penetrated into the food. Therefore, most molds are threadlike spores (USDA, par. 1).

Mold is found in virtually every environment. It is found inside and outside. It is found throughout the year (USDA, par. 7). Mold grows in warm humid conditions. Outside, these may be shady damp areas where leaves and other materials are decomposing (USDA, par. 7). Mold can also grow in refrigerators because they can tolerate sugars and salts better than most other food invaders (USDA par. 15). There are different kinds of molds including blue molds which grow on breads, green molds which grow on cheese and water molds which live in water and soil (Ammirati, par. 2). Mold does not need light to grow but each kind of mold needs certain materials for growth (Pascoe 7). Mold is the only plant that does not have roots, leaves, flowers, or seeds (Pascoe 7).

### **How is mold harmful?**

It is probably not surprising to learn that mold is potentially harmful.

However, it may surprise one to learn that mold has been linked to types of cancer. Molds can cause problems as common as allergic reactions and respiratory problems (USDA, par. 5). Some other diseases that mold can cause are athlete’s foot, and ringworm in people, and various blights in plants (Pascoe 7). Some more serious if not treated diseases that mold can cause are dangerous forms of pneumonia and it can infect the lungs (Pascoe 17). Mold sometimes contains a poisonous substance called “ mycotoxins” that can make you sick (USDA, par. 5). Mycotoxins are “ found primarily in

grain and nut crops” (USDA, par. 10). They are also found in “ celery, grape juice, apples, and other produce” (USDA, par. 10). According to one source, as much as twenty-five percent (25%) of the world’s food crops are affected by mycotoxins (USDA, par. 10). Some mycotoxins, such as aflatoxin, can cause cancer. Mold is not something to mess around with.

### **How is mold beneficial?**

Despite its ugly appearance and potentially hazardous effects, mold can offer some great benefits. First of all, mold can be beneficial to the gardener. Leaf mold greatly improves the structure and water-holding capacity of soil. “ It also creates the perfect conditions for the community of beneficial organisms that dwell in your soil” (Galloway, par. 1). Leaf mold can hold up to 500 times its own weight in water” which helps plants to retain moisture during the summer or dry season (Galloway, par. 8). In a recent study “ they found that garden soil amended with leaf mold had a twenty percent(20%) lower bulk density than soil to which leaf mold was not added (Galloway, par. 9). It also fertilizes soil by breaking down the dead organisms and waste material (Ammirati, par. 5).

In the early 1900s, scientists had began working to develop drugs that could destroy microbes, but the substances that came out where either ineffective or dangerous (Cupp, par. 29). However, one day “ Penicillin” which is made from Penicillium mold was invented (Ammirati, par. 5). Penicillium mold is green-gray color

(Pascoe 29). It was invented accidentally by Sir Alexander Fleming, a British bacteriologist, in 1928 (Dauben, par. 38). His laboratory was in London

(Souza 49). He noticed one day that a bit of mold of the genus “ Penicillium” had contaminated a laboratory dish containing bacteria. All the bacteria had been killed around the mold (Dauben, par. 38). Therefore, mold would ultimately be used for a variety of medical problems. Not until the end of World War II (1939-45) was there enough of penicillium available to treat large numbers of patients (Souza 50).

Another thing that mold is good for is eating. People may think why and who would eat mold? Some molds are used to make certain kinds of cheese. For example: Roquefort, blue, Gorgonzola, and Stilton (USDA, par. 14).

The most recent discover is “ the new mechanism in the reproductive cycle of certain species of mold.” “ This mechanism protects the organism from genetic abnormalities by “ silencing” unmatched genes during meiosis (sexual reproduction).” It is to help target unwanted genes such as the HIV Virus, and other serious diseases (ScienceDaily, Par. 1).

Another thing that molds are useful for is it plays an important and helpful role in the cycle of life. The molds help breakdown the dead plants and animal material then it returns useful nutrients to the soil (Pascoe 6).

Aspergillus blown mold doesn’t help save lives but it is often used to produce that citric acid that gives some candies and soft drinks a lemony flavor, as well as to make soy sauce and a Japanese alcoholic drink called sake (Alvin Silverstein, Virginia Silverstein, and Robert Silverstein 47-48).

The study of mold is not for the weak stomach. The greenish color and resulting decay of the food does not make it a very appealing subject to

most. However, learning about mold, what it is, how it can be harmful and how it is beneficial can be rewarding. Mold has an interesting way of finding foods different from most other plant life. They also have a strange way of traveling, basically catching a ride, on breezes and air currents. The most disturbing things about mold is how sick it can make someone, but we mustn't forget there are benefits that have been found using mold in research to treat some types serious diseases. However, as I learned from my research, mold has its good and bad characteristics.