

## ***Growing Local Mushrooms in the Hudson Valley***

John Griffin, Ginsberg Foods

I had the pleasure to interview Joe Bulich, of Bulich Mushroom Farms, in Catskill NY. Now, I've been to visit before, and have spoken to Joe, and his brothers Mark and Mike. They are very nice folks, farmers from way back, and always ready to talk Mushrooms. This time I got an extensive education into what it takes to grow mushrooms on a commercial level.

Bulich Mushroom Farms has been around since the 1950's. This is now the third generation growing mushrooms at their farm in Catskill. When their Grandfather started growing, it was the heyday of Hudson Valley Mushrooms. It started earlier in the 1900's, when all the limestone caves became available for new uses. Limestone was quarried for cement production, and the resulting caves were used for ice storage. Ice cutting and ice storage was a huge business along the Hudson, with thousands of tons of ice cut each year, and stored in caverns to be shipped all over the world. This industry died out with the invention of commercial refrigeration.

As mushroom farmers became bigger businesses, they turned to barns for their production. The barn atmosphere is easier and cheaper to control, and the barn structure is more conducive to the transport and moving of tons of manure, which is the base of mushroom production. The mushrooms are grown at a temperature of 62-68 degrees, with a relative humidity of 90%. This is during the growing phase; the manure itself needs to be worked for several weeks, at many temperatures to grow large amounts of mushrooms.

Bulich Farms is a large scale producer of 5 kinds of mushrooms, White, Shiitake, Oyster, Crimini, and Portabellas. They are dwarfed by the massive operations in Pennsylvania, but they do produce about 450,000 pounds of mushrooms each year. Their major customers include Ginsberg Foods, in Hudson, NY, the Culinary Institute of America, the Union Square Greenmarket in Manhattan, and several Albany produce wholesalers.

Actually picking, boxing, and distributing mushrooms is only a part of the operation. For weeks the Bulich farmers work with massive amounts of manure, getting it perfect for mushroom production. They start with horse manure, which they purchase and bring to the farm in a very large open truck. This is spread in a giant pile, probably 20' high and 100' long. This pile is watered continuously, and the temperature reaches about 120 degrees, from the natural composting of the manure.



***Big steaming pile of future mushroom soil***

This pile is worked into a giant composting machine, which shreds, aerates, adds water, and compresses the manure. The manure is warmer still at this point. Chicken manure and Gypsum are added in certain quantities, depending on the status of the original material, to gain an exact PH and Nitrogen level. This process will change every month of the year, as it is an outside job, which will need to be worked at every ambient temperature that the Hudson Valley provides, from minus 20, to 100 degrees. The resulting manure is put through this composter 4 different times before it is brought into the barn. This process is something the Bulich brothers do about once a month.



**Manure Composter and Shredder**

After about 2 weeks of work, the composted manure is transported to the barns, and with a conveyor, is positioned in the giant wooden beds which will be used to actually grow the mushrooms. The manure is pretty black at this point. The PH, Nitrogen, and moisture content need to be to exact specifications. The entire barn is about 120 degrees at this point. Now, the manure needs to be sterilized. Using high pressure steam hoses, the manure is warmed in every square inch, to a point where no bacteria or other organisms can live. The entire barn is raised to over 145 degrees for several days. Giant refrigeration units then cool the barn to a mushroom growing level, about 65 degrees.

The Bulich's purchase mushroom spores from laboratories in Pennsylvania, as do most large scale mushroom farmers. These are microscopic spores which are inoculated on Millet Seed or Rye Seed for ease of planting. The spores are broadcast by hand onto the black, sterilized, odorless manure, and tilled in. This is a delicate operation, as the spores are very expensive. In about 17 days, the black manure will be almost white with mushroom roots growing throughout the soil. Peat Moss and lime are spread on top of the soil about one inch deep at this point.



**Mushroom roots growing in sterilized soil**

At this point the barn is kept at a constant 90% humidity, and 68 degree temperature for the mushrooms to grow. The temperature will be lowered to 62 when harvesting. There is 3 or 4 week harvest for this particular barn, the other barns will be worked and planted as the mushrooms are being picked here. Each harvest is called a “break”. The first break in this barn will yield about 5,000 pounds of mushrooms. The beds are then raked, cleaned, and watered. A few days later the second “break” will take place, this one yielding about 8,000 pounds of mushrooms. The Bulich Brothers get 3 or 4 breaks for each planting of mushrooms, depending on many circumstances, as each break after the 2<sup>nd</sup> will result in a lower yield.

You can see from the pictures that the various mushrooms are grown in the dark, and fed horse manure. The pictures are showing one bed each, in various stages, with various types of mushrooms. Each barn has 4 levels of beds, with 4 rows of beds from one end to the other. There is an extensive conveyor system in each barn to move the manure at each stage, and to clean out the barn at the end of production. The amount of equipment needed for this operation includes tractors, to transport vehicles, to composters, heaters and refrigeration units. A lot of oil is burned, and electricity used to ensure the constant temperatures needed at each stage of production. This is large scale farming, and it can be a very profitable business.

Each type of mushroom has unique properties. All mushrooms are about 90% water, but the amount of minerals and other flavors change dramatically from one type of mushroom to the next. Freshness is the key to a good mushroom, and locally grown mushrooms are a necessity for a good restaurant menu. Like the old saying goes, “if you’re well fed, thank a farmer”. Mushrooms are probably more about taste than about nutrition, but they sure are a popular item all over the area. We thank the Bulich’s, and all our other local farmers for what they provide us all year long.



**Start of mushroom production**



**An early Portabella bed in production**



**White Mushrooms in full production**