

Selection of *Pleurotus ostreatus* Strains in a Genetic Breeding Program

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The basidiomycete *Pleurotus ostreatus*, commonly known as oyster mushroom, is the second largest edible mushroom crop behind the white button mushroom, *Agaricus bisporus*. It accounts for nearly one-quarter of the total worldwide mushroom production. Furthermore, *P. ostreatus* has a high industrial interest because it is a good source of enzymes and other products with biotechnological, industrial and medical applications, it is easy to cultivate and because of its good organoleptic characteristics.

Since of 2003, our group research has carried out genetic breeding programs based on the determination of QTLs controlling production and quality in industrial cultures of this fungus. In this breeding program the first test consisted in putting under fructification conditions 130 strains obtained from the crossing of protocolon PC21 (*P. ostreatus* var. *ostreatus* wild strain) by a collection of monokarions derived from N001 (*P. ostreatus* var. *florida* commercial strain). For this purpose, 2 kg (3 repetitions per strain) bags of industrial substrate were inoculated and cultivated at 21°C. Mature fruiting bodies were collected and weighted daily during the fructification period.

The second test was made using the six strains that performed the better in Test1, but were cultivated at 18°C and with 15 repetitions per strain were performed. From this test, three strains were selected and used in Test3. In this test, other three strains obtained from the crossing between monokarions descending of N001 and selectioned for their high growth rate were introduced. In this test the weight of the bags was increased to 5 kg and the cultures were cultivated at 18°C.

The strains obtained from PC21 have good characteristics for mushroom size, with similar behaviour for yield and precocity.

The strains obtained from the crosses between N001 descendants have better mushroom size and similar yield and precocity than N001, then breeding was obtained.

The candidate strains for next tests are PC21xMA046 and PC21xMA027 for their high yield and the mushroom good features.