

# New button mushroom varieties need better protection

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A working group has recently been formed to work on a better protection of button mushroom varieties. Its activities are firstly directed to generate consensus among the spawn/breeding companies to consider using fertile single spore cultures to improve strains as the generation of EDV's. For this reason the working group has generated a position paper. The group consists of representatives of the European

spawn producers Sylvan, Amycel, Limgroup, and the research groups of INRA Bordeaux, France and Plant Breeding Wageningen UR, the Netherlands.

During the last 35 years, button mushrooms varieties has been improved by making minor changes to the first hybrids that appeared on the market in 1980. These small changes have been made using the typical life cycle of the button mushroom. Most spores of button mushrooms are individually able to produce mushrooms. A variety generated in this way is very similar to the variety from which these spores have been isolated. By evaluating these type of offspring one can easily find varieties slightly different from the original varieties. This is thus a way to generate small adaptation to existing varieties. The changes made in this way to the first varieties during the last 35 years were useful and have improved quality and yield to some extent. Genuine new traits, however, were not introduced. All present-day white varieties are sensitive to the same diseases, have the same taste and similar appearance, qualities and yields.

## **Introducing new varieties using fertile spores**

Introduction of new traits can be done using genetically different, usually wild collected, strains. These show a large variation in many traits and can thus be used to introduce new traits in present-day varieties. There are many examples in other crops where new varieties have generated new business or enlarged market segments in the food industry.

Although breeding button mushroom using wild lines (outbreeding) is well possible, it costs time and requires thus a considerable investment. As mentioned before, once generated, such a new varieties can be modified slightly using fertile spores. This modification takes much less time and thus investment compared to introducing new traits by outbreeding. Such derived varieties can thus outcompete the new variety in short time reducing the return of investment by the first breeder

considerable. This appears to be one of the main reasons for the lack of investment in breeding.

## **Protection mushroom varieties**

As for plants, mushroom varieties can be protected in most countries thanks to the International Convention for the Protection of New Varieties of Plants (UPOV). The 1991 revision of the UPOV convention also included essentially derived varieties (EDVs). They are defined as [varieties](#) that are mainly derived from the original variety, are distinguishable from the original variety but have otherwise strong resemblance to the original variety. According to its definition, fertile single spore cultures of button mushrooms should be considered as EDVs. A good definition that defines all types of EDV is, however, difficult to make. For this reason, for a number of crops each breeding industry has generated a position paper in which is stated what has to be considered as an EDV. A breeder that generates an EDV is requested to negotiate with the first breeder on a licence to produce. This ensures that the investment of the first breeder has a return and encourages thus outbreeding.

## **Position paper button mushrooms**

To generate a consensus within the spawn/breeding industry and to convince the relevant governmental bodies, support of the whole mushroom industry is important. It is for this reason that the working group has generated a position paper that explains what is considered as an EDV for button mushrooms and that a breeder of such a variety should negotiate with the first breeder for a license. The definition of EDV for button mushroom in the position paper should be considered as a special case of EDV in edible fungi and is a first step for a broader definition of EDV for edible mushrooms.

Provided by Wageningen University

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