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**CLASSICAL STRAIN DEVELOPMENT USING THE COLONY PICKER QPIX2****MARTINA SCHREITER, THOMAS HAARMANN, PATRICK LORENZ, JARI VEHEMAANPERÄ**

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The aim of the project is the stepwise increase of the  $\alpha$ -amylase activity of the filamentous fungus *Aspergillus oryzae* by classical mutagenesis of the production strain. To find a high performing mutant strain, a huge amount of mutants has to be picked and analyzed which is very time consuming if done manually. Furthermore the viscous growth of the strain leads to difficulties in cultivation and less reproducibility of amylase activity. On this account a technically feasible screening-process to increase the amylase activity had to be developed. The use of the colony picker QPix2 (Genetix) enabled us to pick the required number of mutant strains in a fast and efficient way and analyze the mutant strains in a 96 microtitre plate format. Based on the fact that the colony picker was originally designed for picking bacteria or yeast we had to overcome different obstacles regarding e.g. the design of the picking-pins, the density of plated spores, or the size of the colonies. Additionally, the redesign of the cultivation medium leading to less viscous growth of the strain was essential to increase the comparability of the results. Several experiments will be shown in which we try to define the optimal values for the picking parameters as well as the optimization of the cultivation medium.

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**CONTROL OF PENICILLIUM EXPANSUM PATHOGENESIS AND PATULIN PRODUCTION BY PEARS OF SARDINIAN GERMOPLASM****LOREDANA CUBAIU, GIANFRANCA LADU, TULLIO VENDITTI, GUY D'HALLEWIN**

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The aim of this research was to correlate the natural resistance of different Sardinian pears accessions against *P. expansum* and its capability of patulin production. Experiments were carried out in vivo and in vitro with seven accessions of pears (Sarmentina, Vacchesa, De Puleu, De su Duca, Natalina, Oliena, Laconi5) belonging to the CNR- ISPA ex-situ collection and one national cultivar (Abate) used as control. *P. expansum* was isolated from blue mould-decayed Sardinian pear fruit and selected for its aggressiveness and patulin production. Mycelial growth of *P. expansum* were evaluated in vivo on wounded fruits and in vitro on a standard growth medium (Potato Dextrose Agar, PDA) and on Pear Puree Agar Medium (PAM), for 7 days at 23° C. *P. expansum* growth was evaluated by means of daily measurement of the colony diameter and by observations made through the scanning electron microscope (SEM). Patulin production was detected by high-pressure liquid chromatography-mass spectrometry (HPLC-MS) and the expression of the isoeopoxydon dehydrogenase gene (*idh*), involved in patulin biosynthesis was monitored by real time PCR. Mycelial growth of *P. expansum* on Sardinian PAMs was inhibited in comparison to Abate PAM and PDA. In particular the accessions Sarmentina and Vacchesa showed the maximum inhibitory activity both in vitro and in vivo. Patulin concentration on PAMs from Sardinian accessions was lower than patulin detected in PDA showing that there is a positive correlation between fungal growth and patulin production. Otherwise the *idh* gene was downregulated in presence of PAMs medium, suggesting a post trascptional regulation. Sardinian pear accession seem to have a high effect on the development of mold decay and inhibition of patulin production.