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EFFECT INOCULATION OF WHEAT AND DIFFERENT TILLAGE SYSTEMS IN SOIL NITROGENASE ACTIVITY

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This paper deals with result of the effect inoculation of *Azotobacter chroococcum* and tillage systems on soils and root nitrogenase activity. The trial was carried-out at the experimental fields Faculty of Agriculture- Zemun "Radmilovac" on the eutric combisol. The following tillage systems were included in investigations: 1. Conventional tillage system-(CT), 2. Mulch tillage-(MT), 3. No-tillage system (NT). The seeds were soaked for 30 min in an *Azotobacter chroococcum* PS13 inoculum. Nitrogenase activity was determined by gas chromatography, using Porapak N column (Hardy, 1968). The wheat root samples were washed, the excess water was removed with filter paper, than, 1g of fresh weight were homogenized. The homogenized root was transferred into 8,7 ml glass bottles with 4 ml free-N substrate with mannitol as carbon source. Samples of 0,2 ml were inserted with Hamilton syringe into the injector and the area of the ethylene peak was read on the display. The soils samples (1g) incubated at 48h and transferred into 8,7 ml glass bottles with 4 ml substrate with glucose as carbon source. The ARA was carried out on a gas chromatograph using Porapak N column. Nitrogenase activity was detected in roots in soils of both inoculated and noninoculated wheat in cultivar NS-Rana5. The obtained results indicate that the nitrogenase activity very significantly influenced by the tillage systems, inoculation, the phenophases wheat cultivars as well as their interaction. The highest nitrogenase activity in rhizosphere soil is found after mulch tillage. Maximum nitrogenase activity roots was found during the heading stage in mulch tillage.

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THE GROWTH OF MICROALGAE USING AN EFFLUENT FROM A BREWERY AS THE CULTURE NUTRIENT MEDIUM

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The treatment of effluents from Agro Food Industries is a major issue in EU due to its industrial and economic importance. Microalgae can be used in wastewater treatment where they may be able to recycle nutrients. Besides, they can reduce the nutrient load through stripping and precipitation, by producing oxygen for bacterial decomposition of organic matter, by eliminating pathogenic bacteria through bactericide action, and by solving odour problems. Treatment efficiency and nutrient removal are managed in function of algal growth, wastewater characteristics (nutrient imbalance, chemical and biological toxicity), and operational parameters. In this study, the effluent coming from a brewery was used as the culture medium for biomass production, which can be processed for valorisation or directly used as a biofertilizer. We evaluated the growth of microalgae, either *Chlorella vulgaris* or the autochthonous flora, using the effluent of a brewery as the nutrient medium. We also evaluated whether the microalgae used the compounds of the effluent as nutrients. The microalgae were grown in different proportions of effluent, 33%, 50% and 100%. The effluent was diluted with distilled water and a control experiment was established using BG Medium (Blue Green). In addition, nitrogen of the brewery effluent was brought to the BG medium concentration, and pH was also corrected. Growth was enhanced when using 50% effluent, with a significant decrease in the amounts of ammonia, nitrates and phosphates of the effluent. Moreover, the malodour of the effluent has disappeared by the end of the experiment.