– insufficiently developed navigation technology;
– labor safety of workers (robots may "miss" a person on their way);
– difficulties associated with the characteristics of agricultural processes.

The dairy industry is at the forefront of robotics adoption. Systems for animals feeding and cleaning barns are already actively used. The market volume is estimated at $ 1.9 billion, and in 5 years it will increase by 4 times. Another promising direction is robots for grazing animals which is going to be developed in further decade.

According to IDTechEx (based in Cambridge, the United Kingdom), more than 300,000 tractors with autopilots were sold in 2016. Work continues on the follow-the-leader approach. The concept is that unmanned vehicles follow the leading tractor or harvester, which is controlled by a person. But leading agricultural machinery manufacturers are working on an 100% unmanned tractor. Case IH (based in Wisconsin, the United States) unveiled a concept car last year. Therefore, their research on the problem seems to be quite prospective for irrigation systems to use water efficiently. A similar approach is used in the development of fertilizing robots which can move between the rows of corn and spot nitrogen fertilizer.

To conclude we should claim the future development of the robotics for agriculture. In spite of the difficulties and limitations the research and tests are performing. The fact is that the agricultural equipment of the future is going to be more sophisticated and effective.

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EVALUATION OF THE TEMPERATURE INFLUENCE AND ACTIVE ACIDITY OF THE SOLUTION ON THE RECOVERY OF DRY POWDER FROM FRUIT BODIES PLEUROTUS OSTREATUS (JACQ) P. KUMM

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The improvement of growing technology of *Pleurotus ostreatus* in Ukraine by improving the quality of plant substrates and the introduction of highly effective strains in industrial crops allows obtaining high yields throughout the year [1]. The increase in the amount of mushroom raw material determines the development of new directions of fruit bodies processing, in particular the production of mushroom powder which is successfully used to enrich everyday products: bread, pasta, soups, etc. [2, 3]. But the use of powders for some foods: sauces, the pate filling for pies needs to be restored [4]. Unfortunately, there is no scientific data on the optimal modes of this process.

Therefore, the aim of scientific research was to determine the effect of temperature and acidity of the solution on the index of increase in the mass of the renewed powder from the fruit bodies of P. *ostreatus* (stamm 2301).

To determine the index of the mass increase used a 1g of powder, to which was added 10 ml of the pre-prepared solutions of citric acid according to the variant of experiment (pH from 3 to 5) and neutral as a control (sterilized water pH = 7.2). The temperature of solutions was maintained at 15 ºC (room), heated to 35 ºC and 65 ºC. The powder was mixed with the solutions and the containers were placed in water baths at the appropriate temperature and kept for 30 minutes. The remainder of the solution was then removed by centrifugation. The recovery index was calculated by the ratio of the obtained mass to the initial mass of the powder.

Statistical analysis of the obtained data determined the significant effect of temperature and acidity of the solution on the recovery process of mushroom powder (Fig. 1).

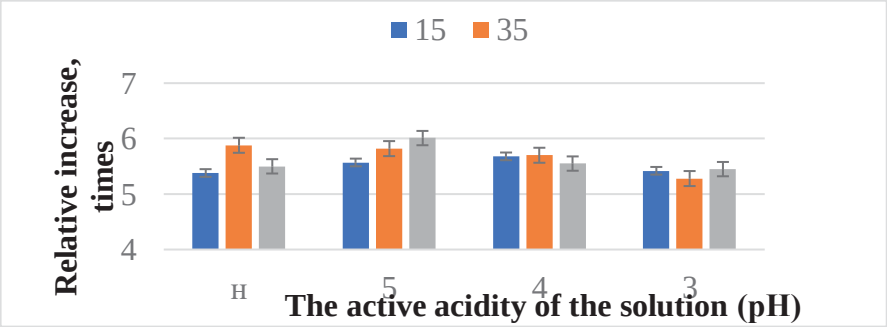

Figure 1. Changes in the mass of the renewed powder of oyster mushrooms according to the variants of the experiment

The total index of increase of the renewed powder mass ranged from 5.28 at a solution temperature of 35 ºC (pH = 3) to 6.1 at 65 ºC (pH = 5). There was a direct correlation of the decrease in the renewed mass with increasing acidity of the solution at a solution temperature of 35 ºC. However, a decrease in the renewed mass at elevated temperature may also be associated with partial hydrolysis of polysaccharides and increased solubility of other organic substances, so additional analysis of the biochemical composition of the reduced product is necessary to fully understand the reduction process.

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