

- perform a large scale mapping of soils to find the Mn contents and to elaborate the technology of introduction of Mn - containing microfertilizers
- estimate the intercorrelation between overall concentrations and their mobility as well as other physical chemical parameters, in particular, the ion potential
- select individual bio-geochemical provinces and subregions of biosphere with a high Na and Cl (area round the Aral sea) and Hg, Sb, As-contents (the valley of the Zeravshan river)

The report also presents some special problems of agriculture of Uzbekistan.



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A MECHANISTIC APPROACH TO POSTIRRADIATION SPOILAGE KINETICS OF FISH

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In order to simulate postirradiation spoilage of fish, the mechanistic aspects of the growth of surviving microorganisms during chill storage and their product formation in irradiated fish were analyzed. Anchovy (*Engraulis encrasicolus*) samples those unirradiated and irradiated at 1, 2 and 3 kGy doses of gamma radiation were stored at +2⁰C for 21 days. Total bacterial counts (TBC) and trimethylamine (TMA) analysis of the samples were done periodically during storage. Depending on the proposed spoilage mechanism, kinetic model equations were derived. By using experimental data of TBC and TMA in the developed model, the postirradiation spoilage parameters including growth rate constant, initial and maximum attainable TBC, lag time and TMA yield were evaluated and microbial spoilage of fish was simulated for postirradiation storage. Shelf life of irradiated fish was estimated depending on the spoilage kinetics. Dose effects on the kinetic parameters were analyzed. It is suggested that the kinetic evaluation method developed in this study may be used for quality assessment, shelf life determination and dose optimization for radiation preservation of fish.



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MECHANISTIC AND KINETIC ASPECTS OF MICROBIAL INACTIVATION IN FOOD IRRADIATION PROCESSES

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A proper reaction mechanism was searched by analyzing the inactivation processes of microorganisms during food irradiation by ionizing radiation. By employing transition-state