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Soil quality from the point of view of nutrient transport

The transport soil function plays a dominant role in terms of transport and accumulation of substances in a vertical and horizontal direction in the soil. The aim of this paper is to evaluate the soil transport function on the base of present knowledge of nutrients (nitrogen and phosphorus) transport in the soil. The evaluation of nutrient transport consists from the vertical transport in framework of the soil profile (especially the nitrates leaching) and horizontal transport caused by locality slope (water erosion). The amount of nitrified nitrogen in the soil is very important in this case. The phosphorus transport in the soil depends on "soil volume", e.g. it depends on the soil depth and skeleton contents in the soil and naturally on the locality slope, too. The soil transport functions were classified in five categories: (1) very weak, (2) weak, (3) moderate, (4) strong and (5) very strong. According to the soil transport function information, the areas of individual categories of soil transport function in agricultural soils in Slovakia were created. Very weak, weak and moderate transport of nitrogen was recorded in almost 90% of agricultural soils in Slovakia and in 73% of agricultural soils in case of phosphorus transport. To these categories belong the deep soils (more than 0.6 m depth) with low amounts of gravel located on plains. More than a quarter of the area belongs to the category with strong and very strong transport of phosphorus. Especially in these localities (hilly landscape with shallow soils and/or with high content of gravel) can come to increased content of phosphorus in the water bodies and thus also to a decrease in water quality.

Biography

Stanislav Torma is a Senior researcher in National Agricultural and Food Centre - Soil Science and Conservation Research Institute, Presov, Slovakia. He is the Principal Investigator of research works from the branch of plant nutrition, fertilization, nutrition balance, soil science, soil conversation and ecology. The results of his scientific work are presented in two monographies, 11 books and brochures and two academic texts for students and one university textbook. He is the author or co-author more than 20 scientific reports, more than 120 original scientific papers, almost 150 special papers. He is a member of Slovak Society of Soil Science and International Union of Soil Science (IUSS).

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