



## **Limiting effects of lignosulphonate on leaching of fertilizers in soil conditions**

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Polymers include substances such as lignin, melanin, sporopollenin, soil humic substances. Lignin is crucial for the future of soil and environment. Lignin production technology and its use as a new organic fertilizer are important in agricultural activities. Lignosulfonates are complex polymeric materials obtained as co-products of wood pulping. The end use markets for the co-product mixtures are functionally determined by the surface activity, binding, chelation, reactive group and chemical intermediate properties of the mixtures. In this article, effects of lignosulfonates on fertilizer holding were determined in greenhouse pot experiments. Pot experiments were set up by mixing nitrogen fertilizer with lignosulphonate and phosphorus fertilizer with lignosulphonate and irrigated at the same time with 15-day intervals. Then, leaching solutions collected from pots were analyzed in order to determine ammonium, nitrate, and phosphorus contents of the solutions. Experiment results showed that ammonium, nitrate, and phosphorus contents of the solution were decreased with mixing lignosulphonate. In the treatment of phosphorus fertilizer with lignosulphonate, lignin had no effect on the leaching of phosphorus in the first and fifth irrigations, reduced leaching 54, 33, and 13% in the second, third, and fourth irrigations, respectively. In the treatment of nitrogen fertilizer with lignosulphonate, lignin had no effect on the leaching of ammonium in the second, third, and fourth irrigations, reduced leaching 23 and 37% in the first and fifth irrigations, respectively. In the treatment of nitrogen fertil-

izer with lignosulphonate, lignin had no effect on the leaching of nitrate in the second irrigation, reduced leaching 14, 47, 37, and 15% in the first, third, fourth, and fifth irrigations, respectively.

**Key Words:** Lignosulphonate, fertilizers, leaching