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OBTAINING OF COMPLEX MINERAL FERTILIZER BY PHOSPHOGYPSUM CONVERSION WITH AMMONIUM NITRATE

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Abstract. The paper proposes an environmentally friendly method for phosphogypsum processing into N,Ca,S,P-fertilizers. The liquid complex mineral fertilizer was obtained by treating phosphogypsum with an ammonium nitrate solution. The dependence of the content of Ca^{2+}, SO_4^{2-}, NO_3^- ions in the temperature range of 20-80°C at the ratio $CaSO_4$:NH_4NO_3= 1:0.5 was studied. The optimal temperature for the fertilizer obtaining was established at 60°C. It was obtained a complex liquid N,Ca,S,P-fertilizer with the content of nutrients (wt. %) N:Ca:S:P= 56:26:12:6 in the dry product, and 16.8:3.6:7.8:1.8 in the liquid phase. The obtained fertilizer increased the yield of radish by 7.16% compared to the control. The advantage of the proposed method is reducing the cost of the fertilizer, increasing its nutritional value, and obtaining useful products from the waste.

Keywords: phosphogypsum, ammonium nitrate, complex mineral fertilizer, wet conversion.

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